THE Journal OF THE AMERICAN DENTAL ASSOCIATION

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FEBRUARY 1957 • VOLUME 54 • NUMBER 2

New Denture Development Opposes Porcelain Uppers to Plastic Lowers

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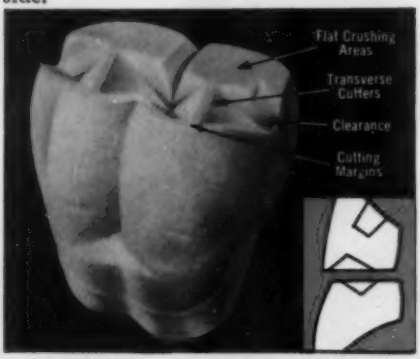

Shows details of occlusal construction of new Myerson and Sears posteriors. Insert drawing shows how upper and lower meet in one plane.

Front-to-back stability is also a feature of this new design. Also, direct escapes for the food are provided. Setting up and achieving balanced articulation have been made easy. For further information and technique write for booklet. Address: MYERSON TOOTH CORPORATION, Cambridge 39, Mass.

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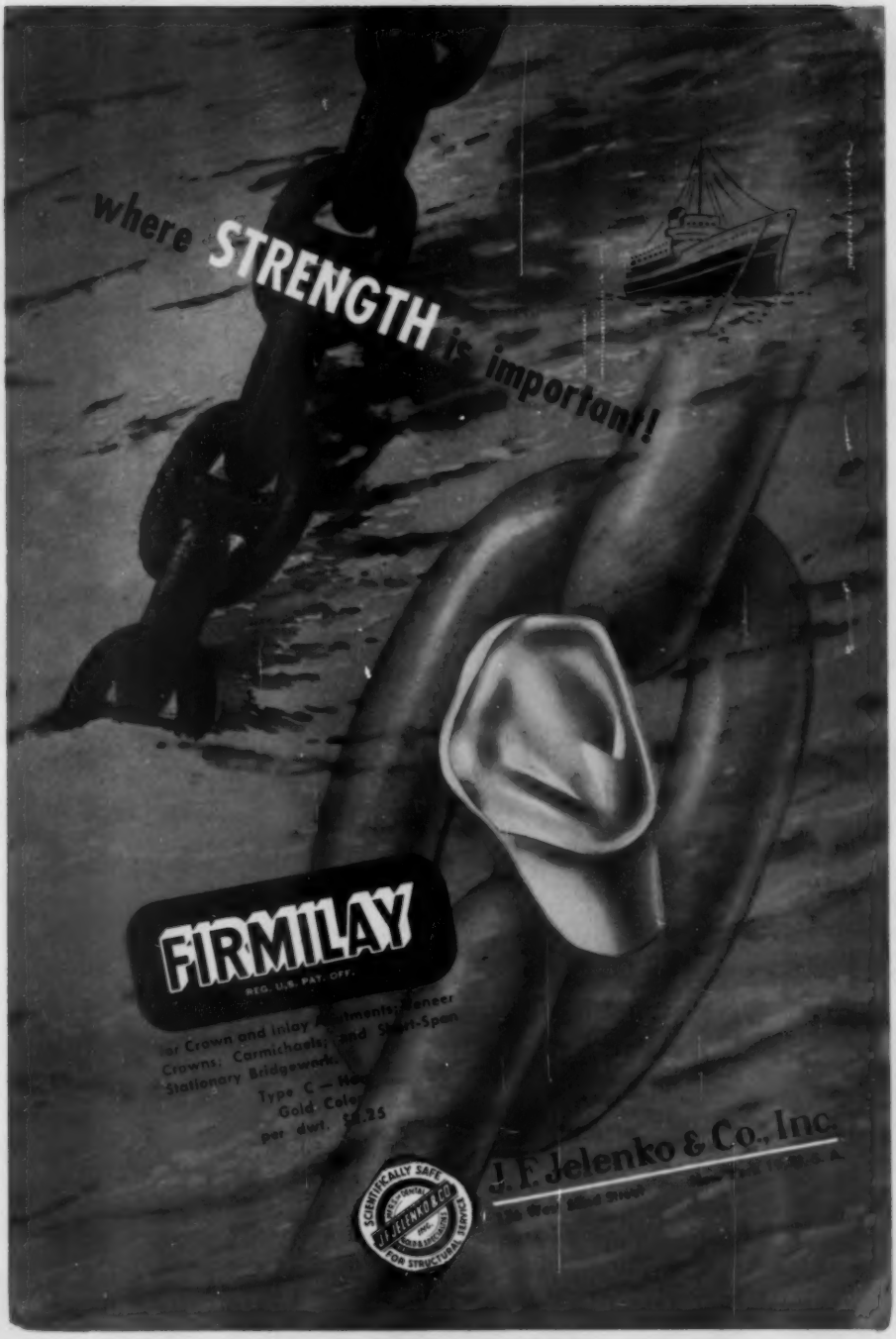
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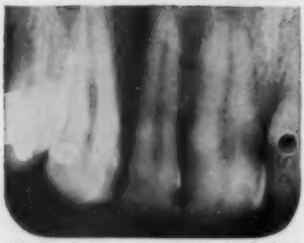

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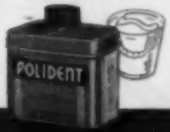

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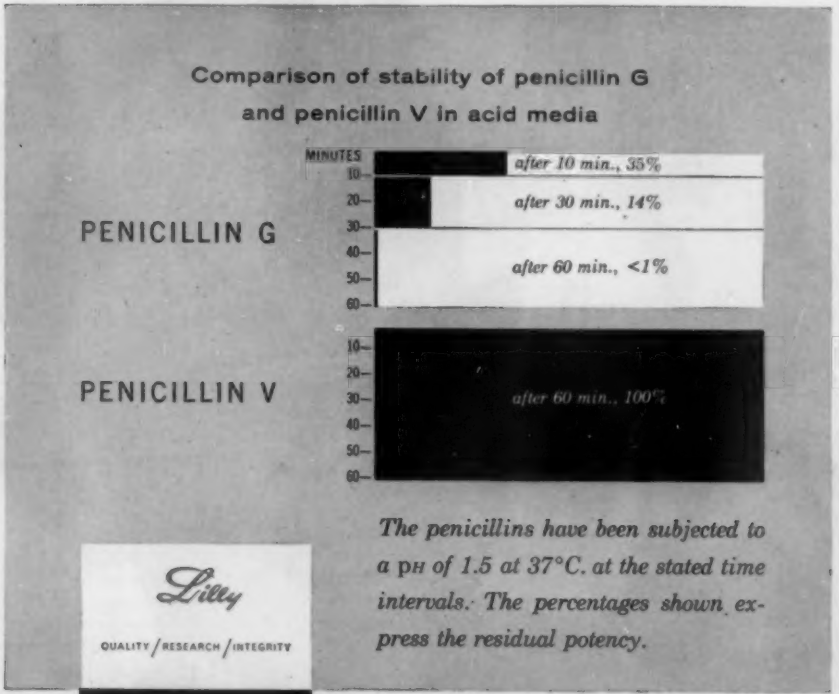

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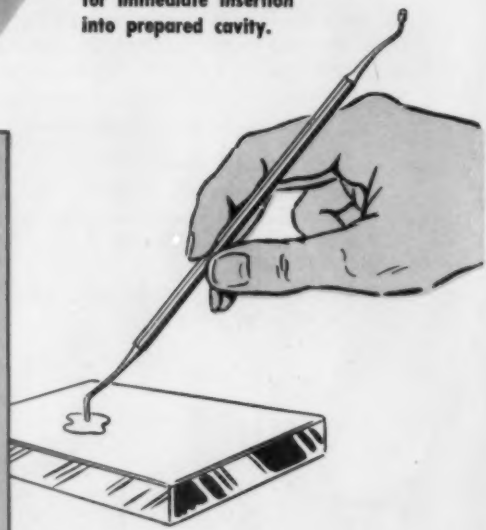

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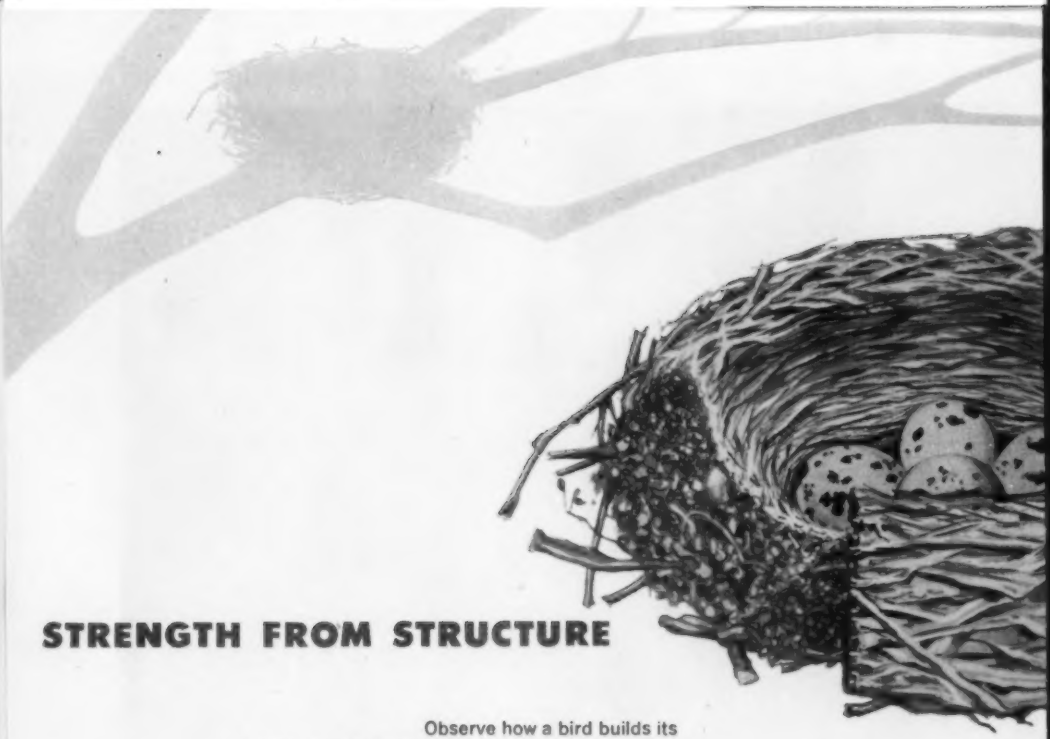

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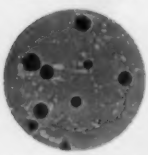

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FEBRUARY 1957 THE Journal OF THE AMERICAN DENTAL ASSOCIATION VOLUME 54 • NUMBER 2

Organized programs for the improvement of the dental health of the public

Widely known representatives of the health professions and the fields of law and finance constituted the roster of speakers for the Seventh National Dental Health Conference held last year in Chicago at the Drake Hotel on May 14, 15 and 16. The event was sponsored by the Council on Dental Health of the American Dental Association.

The purpose of the conference was to assist state dental societies to (1) strengthen state councils on dental health or their equivalent agency operating in the field of dental health care, (2) develop an effective working relationship between such agency and the state health department, (3) improve state health department dental services and (4) establish more effective programs for the provision of dental health care. The conference also considered the role of dental health service corporations and of private insurance companies in third party administration of group dental health care programs. Other subjects studied included specific dental health care programs in the areas of public assistance welfare, vocational rehabilitation and chronic illness.

The 100 conference participants represented 38 constituent and component dental societies, 29 public health agencies and 12 associations in allied health and welfare fields and the field of insurance.

The formal conference papers, with one exception, are presented on the following pages as a source of reference for the dental profession and for agencies which may be involved in the provision of dental health care. A paper on "Development of Dental Health Care Programs for Persons with Chronic Illness" was presented at a dinner meeting as part of the first day's program by Donald J. Galagan, assistant chief of the division of dental public health of the Public Health Service. Dr. Galagan's paper was published in the December issue of THE JOURNAL.

DENTISTRY'S RESPONSIBILITY IN THE CHANGING SOCIOECONOMIC PATTERN

Harold Hillenbrand, D.D.S., Chicago

The assignment I was given states formally that I should discuss "Dentistry's Responsibility in the Changing Socioeconomic Pattern." I could do that very quickly by saying that the responsibility of the dental profession remains the same; socioeconomic trends change all the time. No matter what is done or said, the basic obligation of the profession, through changing or unchanging social orders, remains the same.

Therefore, three things will be discussed: first, the responsibility; second, the changing socioeconomic patterns; third, the mechanisms which the dental profession has available for discharging its responsibilities in the socioeconomic order.

The statement of responsibility is very simple and is phrased most aptly in the *Principles of Ethics of the American Dental Association:*

> The dentist [or the dental society] has the obligation of providing fully of his skills, knowledge and experience to society in those fields in which his qualifications entitle him to speak with professional competence. The dentist should be a leader in his community especially in all efforts leading to the improvement of the dental health of the public.

This conference is a part of the assumption of that responsibility by the American Dental Association.

The *Principles of Ethics* states that the obligation of the dentist falls only in those areas in which he speaks with professional competence. In other words, the dentist need not be all things to all people in solving problems of dental health. For this reason, this conference has invited attorneys, sociologists, public health and other technicians to aid the dentist in carrying out his responsibility. I should like to thank those from other professions and groups who are helping the dental profession in discharging its obligations in this important area of dental health care.

The second part of the assignment, a description of changing socioeconomic trends is not particularly an easy one. In order to discuss the changing social order, we should have to discuss the atomic bomb, General Motors, installment buying, inflation, television, air conditioning, the 40-hour week, cooperatives and delinquency, both junior and senior.

The atomic bomb, for example, both to dentistry and to the other health professions, has brought new methods in technology that will probably have their impact on health practices. Through the sale of General Motors products, new concepts in the size of trade areas have been brought about. Rural communities have lost their isolation, and larger and larger areas are becoming the basic unit for the distribution of health service. General Motors, too, has had an obvious influence on the distribution of dentists throughout the country. In inflation, there is the continuing problem of rising costs which the dental profession must necessarily consider in designing group dental health care programs as well as in private practice. Television has become an instrument of a sort in health education whether in bust culture or in dental health education. Its impact is seen in the advertising programs for dentifrices. Air conditioning is a factor which, because of installment buying, may delay the payment of the dentist even though air conditioning makes him more comfortable while he is waiting for his fee. A 40-hour week has brought a great deal more leisure both to the dentist and to the patient. It has brought about a new con-

Secretary, American Dental Association.

cept in American life in which health plays a very great part. The development of cooperatives has been a significant factor in our changing economy, because it has expanded our concepts in the provision of health care and in other areas of our economic society.

The changes which have taken place in the socioeconomic pattern over the last ten decades could be summarized by saying that this country originally was a rural country with emphasis on the individual: the individual as a patient; the individual as a member of an individual community. Then, very rapidly, came the period of industrialization. At this time, the emphasis shifted from the individual to the group, from the individual to the collective appraisal of various problems. This can be said in another way. While the dentist's obligation to the patient remained the same both in the rural and in the industrial periods, the circumstances under which the obligation was rendered did change. Dentistry had now to enlist the aid of such sciences as sociology in the provision of health care, whereas in the earlier days provision of health care was almost entirely an individual arrangement between the dentist and the patient. The greatest change, with particular reference to the objective of this conference, has been in the relation between two people—originally the dentist and the patient—to the new relation between patients as a group and dentists as a group. It is this changing relation which will be explored in this conference, an increasingly important relation in the solution of the problem of distributing dental health care in this country.

In the discharge of the basic responsibility of the dental profession in a changing society, what mechanisms are available to the dental profession?

At the national level, there are two groups: the U. S. Public Health Service, which is the governmental agency, and the American Dental Association, which is the voluntary agency. Both groups operate within their own particular spheres of responsibility on much the same basis. The functions of the A.D.A. are: the enunciation of standards, the development of principles, research, advice and consultation. This is much the same general obligation which the U. S. Public Health Service has, but the application is somewhat different. The American Dental Association's policies are not inflexible, but are subject to the changing needs of society. It is hoped that this conference will produce some comments on current policies so that they may be altered or strengthened in accordance with the needs of this changing society. The policies of the American Dental Association reflect its effort to discharge its responsibility to society. They reflect also, in another sense, the leadership that the dental profession exercises, and will continue to exercise, in providing better dental health care to more of the American people.

At the state level, again there is the official agency and the voluntary agency: the dental division of the state department of health and the constituent dental society. Here, again, one is governmental, and here, again, one is voluntary. The state health department, through its dental division, can exercise a very potent influence in the problems which are under consideration. Unfortunately, very few dental divisions have yet been able to assume their full responsibility in this area. The reasons are clear. Most dental divisions are understaffed and undersupported, and a good many of them lack a long-range program. This is by no means the fault of the dental division alone, because its obligation is shared to a degree first by the dental society and, more importantly, by the citizens of the particular state who will have as good a health department or dental division as they want when they get around to wanting it badly enough. In the next few years, a great strengthening of these dental divisions should be contemplated for the services that they can offer in a changing society.

At the state level, too, is one of the great strengths in the dental profession's program in the United States: the constituent societies. The character and strength of the 54 constituent societies is, by no means, uniform. The societies vary from very well organized societies to societies which can scarcely claim the status of an organized society.

Most dental societies have been concerned in the last two decades too much, perhaps, with their own membership recruitment; too much with their own housekeeping, with staffing and getting the correspondence handled. They have not devoted the time that needs to be devoted to the development of programs in social and economic areas. As a result, when a new social movement develops, most constituent societies must operate their correlative programs on a "crash" basis. This had to be done on the West Coast with results that have been exceptionally successful. But I have considerable doubt that all of the constituent dental societies would be able to operate similar programs with the same success. It must be said, to the credit of the West Coast dental societies, that they have marshalled their resources both in terms of funds and personnel to get a good look at a very hard and difficult problem. Other societies, less resourceful and less well supported, must look to long-range planning.

To list a set of symptoms, a diagnosis and an outline of treatment for various problems in this area of activity, the constituent societies generally use councils on dental health or similar agencies as their mechanisms. In the last ten years, the over-all development of councils on dental health as effective mechanisms for long-range socioeconomic planning has not been impressive. Too many councils lack the financial and staff support to undertake what are becoming increasingly complex and important problems. Too many councils on dental health have been concerned with a limited aspect of the total problem: dental health education. When the posters have been distributed for National Children's Dental Health Week and when there have been three speakers on the radio, two on television and one before the local parent-teachers' associations, many might feel that the council on dental health's obligation has been fulfilled. This is not said disparagingly, because in the last ten years there has been some visible development; but there is now a need to look intensively at the very rapid development of the councils on dental health in the constituent societies as one of the effective means of handling the problems that this conference will have under consideration.

Finally, we come to the most important level of all: the component society level. This type of organization is hardly discernible in some areas of the country. The component society, the local health officer and health department are particularly important because of their influence at the level where the dentist actually treats his patient. It is at this level, also, where dentistry's public relations begins. It is at this level where patients' needs can be detected, and it is at this level where the dentists can render a competent service. Unless national policies are well established to meet the needs of the state and the constituent society, then it is almost impossible to have a successful program at the component dental society and local level.

All three levels of the organized dental profession must be borne in mind, for each has a distinct responsibility. Although the facets of that responsibility may appear to differ, they are all clustered around the same fundamental obligation of trying to improve dental health service.

A great period of experiment in the provision of health care is approaching. It is no good to say that it can't be done; it is less good to say that we're going to sit still and wait until the plans go home; it is still less good to say that this is "socialization" and, therefore, is not the con-

cern of the dental profession. Although some of these things may be partially or wholly true, the fact remains that a changing social order now confronts the dental profession with more insistent requests for expanding its health services. No profession conscious of its obligation to society can ignore or frustrate such requests coming from larger and larger groups of the population. Whatever happens in this changing society, it is clear to me, personally and officially, that the American people deserve to have a higher level of health care, including dental health care, as a part of their increasing standard of living. It seems obvious, also, that the American standard of living cannot go on increasing, as it has done almost for the last generation, without making a real part of that better standard of life a better standard of dental health care for all the people.

AN EFFECTIVE DENTAL HEALTH CARE AGENCY FOR A DENTAL SOCIETY

Albert L. Borish, D.D.S., Philadelphia

The dental health problems in Philadelphia are enormous. Activity in this important area of health is spread over the public and parochial schools, the many outpatient departments in hospitals of the city and in health centers of the Department of Public Health, each of which has its individual dental head or authority. To make each cognizant of the other and coordinate their efforts and programs so that they will perform maximum service with these resources was the major problem of the council on dental health of the Philadelphia County Dental Society. This is being done.

The keynote of the entire policy is coordination. Coordination has been practiced without loss of one iota of autonomy to any of the units. The Council usurps the prerogatives of no individual group represented in it.

The organization of the Council is revealed in the illustration. The president of the Philadelphia County Dental Society appoints the chairman of the council on dental health with the approval of the board of governors. The council on dental health consists of individuals representing the Philadelphia Mouth Hygiene Association; dental service, Board of Public Education; dental service, parochial schools; hospital dental departments; the two dental colleges; dental health section, Department of Public Health; members-at-large, Philadelphia County Dental Society; Philadelphia dental hygienists; Philadelphia Society of Periodontology, and the Health and Welfare Council of the Community Chest.

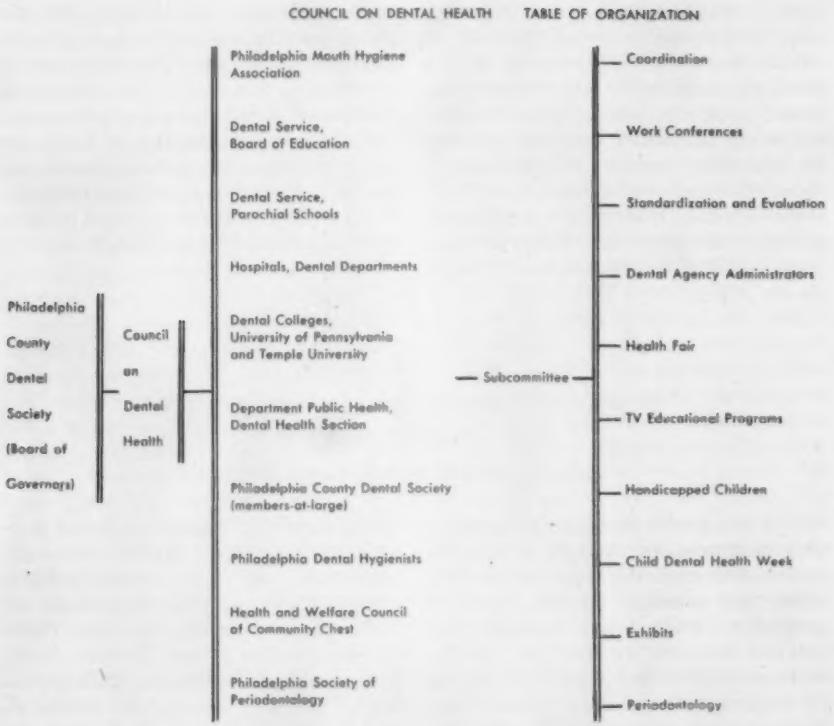
The Council functions as a whole and also through its ten subcommittees: (1) coordination, (2) work conferences, (3) standardization and evaluation, (4) dental agency administrators, (5) Health Fair, (6) television educational programs, (7) handicapped children, (8) Child Dental Health Week, (9) exhibits and (10) periodontology.

The over-all objectives of the Council are as follows:

1. To have all agencies with dental programs represented on the Council with voting privileges.

2. To have all policies approved by the board of governors of the Philadelphia County Dental Society.

Chairman, council on dental health, Philadelphia County Dental Society.



Organization of the council on dental health of the Philadelphia County Dental Society

3. To be the informational center for community dental needs and resources.

4. To help coordinate all community dental programs so that maximum service will be given with these resources.

5. To help each agency obtain community support.

6. To help evaluate programs and induce improvements.

The subcommittees are dynamic. They are fully aware of their responsibilities, and they meet and function. The subcommittee on coordination may do the following:

1. Recommend to the Council:
   a. Policies and procedures for community agencies.
   b. Action to be taken on reports of community programs.
2. Act as reference committee for the Council.
3. Act on requests of community agencies.
4. Study new programs.
5. Evaluate actitivies of subcommittees.
6. Report to the Council regarding the activities of various community dental programs.

The subcommittee on work conferences has successfully completed one of the most fruitful projects attempted locally, the Work Conference on Dental Health for Preschool Age Children. Ninety au-

thorities representing dentistry, medicine, nursing, education, public health and informed and interested laymen participated. Some findings have already stimulated action. City dental health clinics utilized their time during July and August on these preschool age youngsters, and two hospital dental staffs sponsored full-day programs on children's dentistry for general practitioners in the immediate community. The presentation of all phases of pedodontics, presented by the staff, and an impressive luncheon, given by the women's auxiliary of the hospital, made up a model program to which all dentists in the vicinity (100 in attendance at each) were invited. The desired aim of the project was to impress further on a selected community the latest therapeutic and technical skills employed in the handling of the child patient and the need for these skills. The full story of this work conference, with its findings and its 16 points or recommendations, has been accepted for publication in *The Journal of the American Dental Association.*

Presently, the Work Conference on Dental Programs in Hospitals is being planned for March of 1957. Dentists, physicians, hospital administrators and others will consider the scope of dentistry in hospitals. It is hoped that these hospital administrators will be made more aware of their dental problems.

The subcommittee on standardization and evaluation, in April of 1956, revised the "Dental Standards for Treating the Children in Community Programs." The first really great stride toward bringing organized dentistry into working arrangement with dental public health came with the arrival of J. M. Wisan as dental public health administrator in the Department of Public Health in 1953. He made his moves and changes in harmony with organized dentistry. It was the first time in the history of public health dentistry in this city that the Philadelphia County Dental Society was invited to collaborate in solving the city's dental health problems. In January of 1954, the board of governors formally endorsed a new Health Department program of public health dentistry and approved a set of standards comparable to the highest in the nation and drawn up by the council on dental health.

Subsequently, voluntary agencies requested that standards be designated that would be feasible for hospital outpatient clinics. The following "Standards for Dental Procedures for the Child" (revised) is being sent to every public and private dental agency in Philadelphia and will be published in the local and state journals:

It is recommended that all treatment be provided in accordance with high standards enunciated by dental authorities. Attempts to attain short cuts at the expense of fundamental requirements of scientific treatment will result in faulty teeth and endangered health. Dentists should be cognizant of the cooperation available from the medical profession.

It is further recommended that the standard examination and treatment record forms as devised by the subcommittee on dental health agencies be used in all clinics.

In order to enhance the usefulness of dentists, auxiliary personnel (dental hygienists and dental assistants) should be provided in all clinics.

The objective of any program should be "complete dental treatment" and implies the following:

a. Prophylaxis and fluoride therapy.

b. Dental examinations, including roentgenograms and treatment planning.

c. All restorations.

d. Removal of inoperable and infected teeth after adequate roentgenographic diagnosis.

e. Treatment of all oral soft tissue lesions.

f. Referral and follow-up of cases requiring a type of treatment not performed in the clinic.

g. Arrangement for subsequent maintenance treatment.

h. Referral of patients requiring medical attention to a physician.

Recommended Techniques:

1. A complete oral examination that will include the teeth, supporting tissues and oral mucosa should be given. External palpation for pathologic conditions should be included. The occlusion should be examined and any malocclusions noted.

2. Roentgenographic diagnosis should be an integral phase of dental examinations and treatment planning.

3. When a sharp explorer catches in an occlusal pit or fissure, the tooth should be prepared for a restoration. If the roentgenogram discloses an interproximal carious lesion, that tooth should be restored immediately. No cavity is too small to fill. When planning treatment, consideration should be given to the possibility of treating systematically by mouth quadrants. For example, when treatment of the lower right first deciduous molar, lower right second deciduous molar and lower right first permanent molar is required, mandibular conductive anesthesia will enable the dentist to perform extractions and/or cavity preparations of all three teeth at one sitting.

4. Until further scientific data indicate otherwise, topical fluoride application should be an integral part of complete dental care.

5. Operative procedures:

a. Achieve "extension for prevention" in all cavity preparations.

b. Make occlusal locks wide enough for maximum retention in Class II cavities.

c. In all deep cavities, protect the pulp by a suitable lining.

d. Use matrices and gingival wedges in the filling of all Class II cavities.

e. When inserting amalgam for restorations, obtain thorough condensation.

f. Polish all fillings at a subsequent visit.

6. Reduce temporary fillings to a minimum.

7. Utilize anesthesia when indicated.

8. Exodontia procedures:

a. Every infected tooth, deciduous or permanent, that cannot be successfully treated, should be extracted.

b. Before extractions for children with a history of rheumatic fever or with acute dental infection, antibiotics should be provided.

c. After extractions, patients should be given written instructions concerning postoperative attention.

9. Precedence should be given to:

a. Relief of pain.

b. Restoration of the permanent incisors and the second deciduous molar for children up to 10 years of age.

c. Preventive treatment of permanent molars. Restoration is recommended for the occlusal surfaces of all first permanent molars and the buccal surfaces of lower molars and the lingual surfaces of upper molars whenever a sharp explorer sticks in the pit or fissure.

d. Filling of pits and fissures before the tenth year is recommended for the second deciduous molars.

e. Pulpotomy for "vital" pulp exposures is suggested in order to prevent premature loss of teeth.

f. Root canal therapy is recommended for all treatable teeth.

10. Patients should be referred to a suitable agency if the following treatments are not available:

a. Space maintenance for the deciduous dentition.

b. Prosthodontic.

c. Crown and bridge.

d. Endodontic.

e. Treatment of traumatized incisors.

f. Complicated surgical procedures.

g. Orthodontic consultation.

11. Efforts should be made to impart pertinent and authentic information to parents and children in order to influence desirable dietary and dental habits. The importance of brushing the teeth after every meal and before retiring should be stressed. Particular emphasis should be placed on the necessity of beginning dental care for the child at the age of two and maintenance treatment given routinely thereafter.

Evidence of the fact that the council on dental health has been accepted by the community as the authoritative source for dental health education was the recent request of one of Philadelphia's large voluntary agencies to have the Council undertake evaluation of its program.

The Council is developing feasible procedures for helping community agencies to maintain high standards of treatment in their programs.

The subcommittee on dental agency administrators consists of the dental heads of the hospitals of Philadelphia. Great strides have been made by this group. Understanding and cooperation never before realized are now appearing. Plans to standardize programs, records, interchange of ideas and even a move toward offering refresher courses to hospital staff dentists by those institutions stressing one phase more than another is now on the calendar. For example, the Children's Hospital, which has one of the most thorough dental health programs for the child, is offering a course limited to all members of affiliated hospitals.

The subcommittee on Health Fair handles the dental section of the Philadelphia Health Fair. Last year, the second annual Fair drew 81,000 persons. The Council's exhibit, one of the most attractive and best attended, was equipped with two complete dental units, with dentists and hygienists always on duty examining children, giving toothbrush drills and puppet shows and distributing kits and literature.

The dental service of the Board of Public Education prepared a series of telecasts on dentistry that will be used as a format by the subcommittee on television educational programs. Present plans call for study of financial resources for extended programs in the near future.

The subcommittee on handicapped children made a thorough study of the treatment problem faced by dentistry in regard to handicapped children. The child who shows some form of central neurological disturbance and who because of this injury would require special training, care and schooling is included in the category. The results of the subcommittee's extensive survey was published in the March issue of the *Bulletin of the Philadelphia County Dental Society*. Questionnaires were sent to all dentists in the city as well as social service agencies. The aim was to register a complete report of various comments recorded by dentists, compile a list of professional personnel and institutions doing dental work for the handicapped child, collect all of the oral observations of practicing dentists and determine the need for additional clinics and hospital facilities.

The subcommittee on child dental health week presented an 11 point project for 1956. Coordinating the efforts of the Department of Public Health dental section, Philadelphia public school system, Philadelphia parochial schools and Philadelphia hospitals, it was instrumental in planning the following activities during Children's Dental Health Week:

1. Winning Smile contest—finals on WFIL-TV. Council on dental health and the Board of Public Education.
2. Poster contest. Parochial schools of Philadelphia.
3. Public health meeting, Greater Philadelphia Annual Meeting. A symposium entitled "Why Fill Deciduous Teeth" was given.
4. Leaflets (50,000) "Now Is the Time for the Child of Two to Five" by the council on dental health and the Philadelphia Dairy Council. Distributed by the women's auxiliary of Philadelphia County Dental Society to drug stores, health centers and child care centers.

The Philadelphia Board of Health was responsible for 25,000 leaflets, "Two Birthdays to Remember."

5. Evaluation 1955 Work Conference on Dental Health of Preschool Children.
6. Poster, "Protect 'First' Teeth First." Published by the Philadelphia Department of Public Health for display on public buses, trolley cars, subway and elevated trains.
7. Television programs.
8. Radio skits.
9. Newspaper items.
10. Children's dentistry symposium, Kensington Hospital.
11. Distribution of A.D.A. posters, "For Better Dental Health—It's the Brushing That Counts."

The Winning Smile contest, inaugurated this year, was highly successful and well received by the community. For the climax to be reached during Children's Dental Health Week, the contest was begun four weeks earlier. Abram Cohen, supervisor of dental services of the Philadelphia public schools, requested the approval of the board of superintendents. The event was limited to the 41,000 students in the 25 junior high schools. The school dental examiners, teachers and dental hygienists selected a boy and girl winner in each school. The next round of judging took place in the auditorium of the Board of Education Build-

ing where these 50 contestants were reduced to 16, a boy and girl selected in each of the eight school districts. The district choices were further reduced to six, three boys and three girls, during Public Health Day activities of the Greater Philadelphia Annual Meeting. These six finalists, the four judges and the station moderator were gathered before the television cameras of WFIL-TV where the winning boy and girl were named. Each child received a beautiful plaque for his and her possession and duplicates were delivered to the schools of the recipients for their archives.

The judges consisted of a former dean of a dental school, president-elect of the Philadelphia County Dental Society and the dental head of the Department of Public Health. For the semifinal round of the contest, the president of the Society, the president of the women's auxiliary, the president of the dental assistants' association and the professor of pedodontics of one of the colleges accepted the assignment; for the final round, the superintendent of public schools, both the medical director and the dental supervisor of the medical services of the public schools and the chairman of the council on dental health.

The subcommittee on exhibits prepared its first exhibit for the 1956 session of the American Dental Association in Atlantic City. It depicted the objectives, organizational theme and coordination of the Council. Other scenes for the exhibit will be prepared for the next Greater Philadelphia Annual Meeting and other local and state gatherings.

The subcommittee on periodontology is the most recent addition to the Council family. It is now engaged in the following projects: (1) poll of dentists' opinion of periodontal disease; (2) poll of lay persons' opinion of periodontal disease; (3) survey using Russell's index; (4) publication of a leaflet on periodontal disease; (5) courses in periodontology to be presented in hospitals for practitioners in the vicinity of the respective institution. This subcommittee has been presenting ten weekly radio programs for which the starting date of February 3, 1956, was agreed on, because it coincided with the Greater Philadelphia Annual Meeting and fit in well with the publicity attendant to the annual show.

The Council's relationship with the various groups in the community may be revealed in this manner. The chairman of the Council presented a one hour paper on the "Council on Dental Health at Work" at the annual two day session of the Health Institute of the Philadelphia Board of Public Education. This meeting was attended by 500 men and women consisting of the medical and dental staffs, nurses, hygienists and interested lay health educators of both the public and parochial schools.

The Council, through authority given it by the board of governors, presents a scholarship annually to a Philadelphia hygienist to attend the Workshop of the Committee on Health Education at Temple University, one of five universities in the state of Pennsylvania giving the course.

Desiring to stimulate or motivate other groups to develop dental health education projects, the council on dental health, collaborating with the Philadelphia Dairy Council, prepared and printed an excellent leaflet, "Now Is the Time for the Child of Two to Five," for distribution to the dentists of Philadelphia for redistribution to their patients. Requests have come in from all parts of the United States. The latest request, from California, has asked for permission to reprint it for allotting to the dentists of their state, with full credit to be given to the Council and the Philadelphia Dairy Council. During Children's Dental Health Week, this folder was inserted in the weekly publication of the Philadelphia County Medical Society. This issue included also an editorial on Children's Dental Health Week.

Education projects are planned by the Philadelphia Mouth Hygiene Association and the United Cerebral Palsy Association of Philadelphia.

A novel and effective method for studying a problem was conceived by Dr. Wisan. A Mock Trial Investigation of Philadelphia Dental Health Programs for Children was given by the Philadelphia Society of Dentistry for Children in collaboration with the Council. It was set up in courtroom fashion, with a presiding judge, attorney for the commonwealth, attorney for the advisory committee and a jury representing a home and school association, the Health and Welfare Council, a high school principal, the director of medical services of the Board of Public Education, a pediatrician, and deans of both Philadelphia dental schools, among others. Also, there were witnesses, representative authorities in hospital, school and public health dental agencies and even a clerk of the court.

Excellent newspaper reviews were observed on the following day—"Panel calls dental programs for city children inadequate" and "an inquiry into dental health programs was held last night and a 'jury' found them grossly inadequate." The linage secured was about the best to date.

This presentation has enumerated many activities which normally should require a budget of $5,000. However, because of the coordination and cooperation of the various agencies, this has been accomplished with $300 for the first year and with an increase to $720 for the second year. Some few of the projects and the sums required are: the Health Fair —$200 (an amount which will have to be increased); summer-session scholarship for the Workshop on Community-School Health Education at Temple University—$70; a special printing of *Views*, publication of the Philadelphia Department of Health and dedicated to Philadelphia dentistry—close to $300, including mailing to the county membership; publicity expenses incidental to hospital seminars—$75 (this, too, must require more money as the plan develops); mailing of minutes to Council members—$100; funds for sending Council representatives to study hospital facilities and programs in other cities—to be determined, and fund for a television education project—to be determined.

It is unfair to expect individuals to give of their time, energy and finances to subsidize so worthy a program as that which dentistry has accepted as its responsibility. Adequate budgetary allowances should be provided by the local and state dental societies for this most important phase of dental health activities.

AN EFFECTIVE DENTAL DIVISION IN THE PUBLIC HEALTH DEPARTMENT

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The first dental program established by a health department on a state-wide basis was in North Carolina in 1918.[1] Unfortunately, other states were slow to follow the pattern thus created. Most of the early programs arose as the direct result of the interest and activity of dental practitioners and dental societies who recognized the urgent need for broad, state-wide programs directed toward the eradication, or at least the amelioration, of the dental diseases and their sequelae.

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1. Gerrie, N. F. Dental public health. J.A.D.A. 40:750 June 1950.

The flirtation and courtship of dentistry with public health has extended through the greater part of a century and a quarter, but the matrimonial union has had a comparatively short hectic history. The consummation of the union of dentistry and public health on a nation-wide scale was hastened during 1935 when through the Social Security Act the federal government made funds available to the states to operate dental programs.[2] It has been since 1935 that dentistry in public health has become a recognized profession—recognized by organized dentistry, by official public health, and by the public as well.

Distrust and alarm, with the attendant cries of "this is socialized dentistry" and "this is not public health," have greeted the marriage in various areas and at various times. At other times and in other areas, or perhaps even in the same areas, the joining together of dentistry and public health has been hailed as a significant step along the pathway of progress. The fluoridation of communal water supplies is an activity which has caused glowing superlatives to be heaped on dentistry in public health. An example of these statements is that "fluoridation is the greatest advance in the practice of public health that has occurred during the last one hundred years."

A controversy has raged regarding the designation for dentistry and public health; whether it should be "dental public health," "public health dentistry," or "public dental health." Persons actively engaged in the field of dentistry in public health considered the problem of a name during a recent workshop at the University of Michigan.[3] It was determined by those assembled that "dental public health" was the most accurate descriptive term of all those reviewed.

It is the purpose of this presentation to consider the factors that are significant in the determination of the effectiveness of the division of dental public health in the department of health. The factors to be considered are the basic organizational pattern for a health department's dental division, its proper function and responsibilities, its development of a program and budget, its relations with the dental society, with the public and private agencies interested in health, and with the United States Public Health Service and other federal units.

BASIC ORGANIZATIONAL PATTERN

Inasmuch as the organization of dental divisions in departments of health will vary from level to level of public health activity, and from organization to organization on the same level, there is no single "correct" or even "common" basic organizational pattern that will fit every dental division. There are, however, certain fundamental principles of organization which are applicable, to some degree, in each instance.

The basic organizational pattern for state health departments will be reviewed in order that a more detailed consideration may be given to the importance of the organizational pattern of the dental division. The comparatively small number of local health departments having dental programs and the great variation in their organization, operation, and function make it impossible to give more than a passing glance to these programs at this time. It must be emphasized, however, that it is at the level of the local program, the level of application, that dental public health programs reach the public. It is at the level of application that results may be expected and obtained.

There are two general types of basic organizational patterns utilized by departments of health—the horizontal and the vertical.

2. Pelton, W. J. Federal aid in public health dentistry. J.A.D.A. 30:570 April 1943.

3. University of Michigan, School of Public Health. Fourth workshop on dental public health, University of Michigan, Ann Arbor, April 2-6, 1956. Unpublished.

The horizontal pattern is, as the name implies, one in which there may be any number of units operating under the direct supervision and control of the executive officer of the state health department.[4] It is apparent that the horizontal structure could become unwieldy in those instances in which there are an excessive number of units reporting to the health officer. The definition of what constitutes an excessive number would have to be determined by the executive ability of each health officer, and not by any statement of generalities.

The vertical organizational pattern may be characterized as having a hierarchy and being scalar or pyramidal in structure; that is, where the lines of authority and responsibility run upward and downward through several levels with a broad functional base at the bottom and a single executive head at the apex.[5]

On November 11, 1953, the governing council of the American Public Health Association adopted as an official statement a report prepared by the Subcommittee on State and Local Health Administration entitled "The State Health Department—Services and Responsibilities." The report contained many laudable recommendations concerning the organization and the reorganization of state health departments. Primarily, the recommendations were directed toward the reduction of the wasteful operations which may appear in the day-to-day function of an organization the size of a state health department, or to increase the efficient and economical operations of the state health department. The scalar or pyramidal organizational structure was the basic organizational pattern recommended by the subcommittee to the state health departments. It was recommended that there be established a limited number of major units which would report directly to the executive officer of the health department. All of the sub-units having similar areas of activity and function would be grouped together into a major unit.

The proposal for major units tends to break down, however, in that there is no delineation of what constitutes similar areas of activity and function; nor is there any description of what constitutes a limited number of major units.

The Council on Dental Health of the American Dental Association, during its conference in 1951,[6] studied the dental administration in state health departments. It was noted at that time that the reorganization of several state health departments had resulted in the downgrading of the dental division to the third or even the fourth administrative level below the health officer. These changes had developed as the result of recommendations of representatives of the American Public Health Association, administrative advisers of the U. S. Public Health Service, and consultants from schools of public health. Almost without exception these changes were made, or are being made, without consulting the dental profession in the states involved.

In 1950, the House of Delegates of the American Dental Association recommended that dentistry be included as a basic health service of the health department, and that the dental unit be staffed with qualified personnel. In an editorial[7] in the July 1951 issue of THE JOURNAL OF THE AMERICAN DENTAL ASSOCIATION, it was stated that those who would reduce dentistry to a secondary position apparently labor under the false assumption that dentistry can function best as a subsection of one of the medical di-

4. American Dental Association, Council on Dental Health. Dental administration in state health departments. J.A.D.A. 43:61 July 1951.

5. Hanlon, J. J. Principles of public health administration, ed. 2. St. Louis, C. V. Mosby Co., 1955.

6. American Dental Association, Council on Dental Health. Dental administration in state health departments: report of 1951 conference. J.A.D.A. 43:489 Oct. 1951.

7. Dentistry's position in modern public health department. Editorial. J.A.D.A. 43:86 July 1951.

visions. It has been pointed out many times that dentistry is not a subsection of medicine, or a subsection of any other profession for that matter.

> History shows that decadence has always set in whenever or wherever dental education or dental practice has been brought under the supervision and control of authoritative non-dental administration. The reason is not far to seek. It lies in the associated lack of the special dental qualifications and concern which would enable such administration to judge the values and practical significance of the special therapeutic procedure involved in the comprehensive dental art. Physicians, with few exceptions, have always demonstrated notable lack of genuine interest in dental health care.[8]

Dentistry is an entity within itself, and as a profession it is concerned with one of the largest single health problems that confronts humanity. The dental public health unit functions most effectively as an independent unit of the health department working in full cooperation with all the other units of the department, and administered by a qualified dental officer who is directly responsible to the health officer.

PERSONNEL

To paraphrase the recommendations of the House of Delegates of the American Dental Association in 1950, "In order for the dental unit to be able to function as a basic health service of the health department, it must be staffed by qualified personnel."

Realistically, the number and the professional background of the members of the staff should be determined by the breadth and scope of the oral health problems in the state. Unfortunately, however, in this day of enlightenment and progress there remain several dental units of state health departments that have a staff consisting of a director or supervisor, as the situation may be, and a secretary.

Dental public health has expanded beyond the boundaries that were known in 1935, and today the talents of many types of professional persons are needed to man an effective dental division. Dentists and dental hygienists especially trained in public health, sometimes dentists and dental hygienists having an interest in the clinical aspect of public health practice, health educators, public health administrators, psychologists and others are to be found working in various dental units in the nation.

In general, the factors which designate a dentist as being a qualified director apply equally well to the other persons on the staff of the dental unit. "Much of the success of the director of a program of dental public health will depend on his capacity to establish favorable public relations and to organize cooperative efforts."[9]

Public and professional relations and cooperative effort are the key to success in almost every endeavor in which man engages. The cooperative efforts of the members of the staff of the dental unit run the gamut from intraunit projects, through joint action on the part of two or more divisions of the department of health to community-wide or state-wide programs involving the representatives of many professional and nonprofessional organizations.

At one time the public health dentist primarily was concerned with the dental problems of children. The old axiom "an ounce of prevention is worth a pound of cure" was the sole theme of almost every dental program. With the advent of fluoridation of communal water supplies, and with the constant increase in the number of communities instituting this procedure, the dental administrators have the opportunity to initiate programs in aspects other than those related directly to dental caries.

It is essential that the director and the

8. Carr, M. W. Dentistry—an agency of health service. New York, Commonwealth Fund, 1946.

9. American Public Health Association. Proposed report on educational qualifications of public health dentists. Am. J. Pub. Health 42:188 Feb. 1952.

members of the staff of the dental unit be able to function as dental consultants to nondental public health organizations, both official and nonofficial, and to provide specialized assistance to dental organizations and to private practitioners.

In addition to intelligent and effective participation in general public health work and administration, the public health dentist must assume the specialized tasks incident to a dental health program. He should keep informed regarding the latest developments in dental research in order that he may serve as a consultant for oral diagnosis. The public health dentist must be capable of preparing and initiating plans for the dental phases of new health programs, including the determination of the facilities necessary for their operation. Other responsibilities of the public health dentist may be the provision of professional advice in developing and supplying authentic and effective dental health educational material, as well as instruction in sound dental health practice to groups of public health workers, teachers, and others. He may be called on to institute dental research projects which have public health implications and to coordinate the public efforts of a variety of agencies, official and nonofficial, that deal with dental health. He also must be capable of developing specialized indexes and records for measuring and appraising the efficacy of dental health activities.[9]

The personnel of an effective dental division will have a broad insight into social trends as they affect, or will affect, the practice of dentistry, and should interpret these trends to the practicing profession. They must learn how to prepare policies and budgets for an increasing variety of programs. After some experience with the operation of these programs, they will need to evaluate them. All of these activities, and others, grow out of the special problems of administration of the progressive dental unit in the department of public health.

The shift from the point of view in which the individual patient is the center of professional consideration to the community as the center of interest is not accomplished overnight. The technics and attitudes evolved during the development of a public health dentist are based on the same factors that have been learned by other professions and by personnel of other fields of endeavor when they have dealt with the community rather than with individuals.

Standards for professional proficiency and educational background for the personnel on the staff provide an assurance that the health department will have an effective dental division, but the problems of recruiting personnel are manifold and varied. It must be recognized that the stature of the profession is going to be judged by the stature of the people who meet the public.

To the recruiting officer, the members of the dental profession appear to constitute one of the most militantly individualistic groups to be found anywhere. There are only a few dentists who are attracted by the fixed annual income found in public health and who are attracted by working for someone else. There are several other factors which complicate recruitment, but they hinge on one or the other of these two factors, or they are so individual that they do not fit any particular pattern.

The Bureau of Economic Research and Statistics of the American Dental Association has published periodically a compilation of information concerning the practice of dentistry in the United States.[10] The information is presented according to the individual states and according to the geographic regions. A comparison of the average annual income for the dentists in a particular region with the annual income for the dentist in

10. American Dental Association, Bureau of Economic Research and Statistics. Facts about states for the dentist seeking a location. Chicago, American Dental Association, 1955.

public health in the same region reveals that the income for one is almost identical with the income for the other.[11]

Dentists, as others, are reluctant to invest the necessary additional time in graduate school when the financial return will be no more than average, and when the initiation of the income is delayed by the period expended on the graduate work, usually a year or longer. Public health administrators and budget directors are beginning to recognize that in order to secure dental public health specialists they are going to have to provide a commensurate specialist salary. The recognition of this situation has been slow in coming, but it is coming nevertheless. An increase in the salaries for the positions in dental public health, or the rewriting of the specifications to secure the benefits of additional tangible salary, or both, will remove one of the major obstacles to recruiting excellent personnel. To secure such recognition is a responsibility of organized dentistry.

The working-for-someone-else aspect of the practice of dental public health does make certain demands. It demands a willingness of personnel to accept direction and criticism, but it does not entail prostitution of professional rights and privileges. The shift of emphasis from the individual as a patient to the community as a patient, the basic difference between private practice and the practice of dental public health, discloses a problem of tremendous magnitude. Its magnitude is such that it is humanly, as well as humanely, impossible for one person to meet every aspect of the problem singlehanded. It becomes apparent that the team approach is the logical method for attacking the dental health problem of the community.

The team approach may be defined as work done by a number of associates who subordinate personal prominence to the efficiency of the whole. Hence the necessity for being willing to accept direction determines the success or failure of programs of dental public health.

The fixed annual income which has been established at an adequate level through the efforts of organized dentistry has the advantage of allowing the recipient to plan a budget for expenditures for the year. The annual income and expenditures of a private practitioner may fluctuate from year to year to such an extent that a budget is not nearly as practicable, even in many instances is somewhat meaningless and absurd.

When the team approach and the fixed annual income are reviewed thoughtfully, and when these factors are coupled with the benefits of paid vacations, sick leave, and all of the other factors so common to civil service and merit systems, the problems of recruitment of personnel for the positions in dental public health begin to pale and fade away.

FUNCTION AND RESPONSIBILITY OF DENTAL DIVISION

E. G. McGavran,[12] dean of the School of Public Health of the University of North Carolina, suggests that a working definition of public health include those activities of a team of persons of the health service professions working together as equals to diagnose and treat the health needs of the body politic.

This definition says in essence that the job of public health is to diagnose a community's health needs and then to treat them. To progress a step further, the function and responsibility of the dental public health unit is to diagnose and treat the dental health needs of the community.

The dynamic nature of public health, coupled with the fact that it is accountable to the taxpayers, requires that there be a plan or program for every segment

11. Dental health personnel salary ranges. Bul. Am. A. Pub. Health Den. 15:24 Aug. 1955.

12. McGavran, E. G. What is public health. Fourth workshop on dental public health, University of Michigan, April 2-6, 1956.

of activity. The successive phases of planning a program can be enumerated as follows:

1. Determination of specific problems or needs.
2. Delineation of long-term, intermediate and short-term objectives.
3. Assessment of resources available or obtainable for the conduct of the program.
4. Selection of the methods or activities to be used to gain the objectives.
5. Continuous or periodic evaluation of achievement or progress toward the goals.
6. Redirection of the program when indicated by shifts in circumstances.
7. Evaluation of final results.[13]

The tripartite division of the objectives (long-range, intermediate, and short-range) of the program is a logical progression from the general to the specific. The long-range objectives are those conditions to be attained in the ideal society and stated simply as the complete eradication of an undesirable entity from the experience of the community. It is superfluous to point out that there can be no expectation of attaining the long-range objectives of a program promptly, despite the expenditure of every effort in that direction. The intermediate objectives are those included within the long-range which are attainable within a known or predictable period of time, usually about 10 or 20 years. The short-range objectives are the specific activities to be completed in a specified period of time, usually the one or two year period of the organization. Methods for the attainment of the short-range objectives may be included in the program as aids to evaluation.

The functional areas of activity of the dental division may be divided into several overlapping segments. If the dental division is to be effective in the diagnosis and treatment of the oral health needs of the community, there first must be a recognition of the existence of a problem or need and then a determination of the extent of the problem. Upon the completion of the collection and summarization of the essential information will depend the determination of the possible methods by which the oral health problem may be reduced or removed. The tools available to the public health dentist are dental health education, prevention, remediation, evaluation and research. These tools may be used singly or in combination, as indicated, to attain the desired objectives of the dental division.

The factors in the determination of an effective dental division which have been considered thus far are important, but their importance is overshadowed by the relationship which exists, or should exist, between the dental division and the dental profession. Only when the dental profession provides the dental division with strong and constant support will the dental division be capable of functioning in an effective manner. The effective dental division is a resource for the dental profession and for the community to utilize in the programs for the improvement of the oral health of the population and the enhancement of the prestige of the profession.

Modern dental public health arose as the direct result of the activities of dental practitioners and dental societies. After many disappointing experiences, the profession recognized the need for facilities and personnel to assemble the information essential for the proper planning, initiation, and operation of dental activities in the community.

By utilizing the methods of statistical appraisal, the personnel of the dental division are able to estimate not only the magnitude and the distribution of oral disease, but gain a notion of the methods available to reduce or eliminate these con-

13. University of Michigan, School of Public Health. Proceedings of the first national conference on evaluation in public health. Ann Arbor, Mich., University Publication Services, 1955.

ditions. This statement is not to be interpreted to mean that the personnel in dental public health are in possession of some occult power which enables them to decipher the cabalistic signs and symbols so common to statistical procedures —it is intended merely to point out the importance of this, the newest, specialty within the dental profession.

The dental division of the department of public health provides an excellent medium for disseminating to the community factual information concerning good oral health.

The combination of the dental society and the dental division represents a major segment of the health service professions in the community. The department of health is an official governmental agency and thus has a responsibility to the public. The dental society is a group of professional people who are interested in all phases of health problems in the community, but they are particularly interested in the specialized areas of the oral problems of the people of the community. The dental society, like the dental division of the department of public health, ultimately is responsible to the people.

The dental division serves as a resource for dental health educational material. The private practitioner may seek and secure assistance from the dental division in providing individual patients with up-to-date information concerning oral health. The dental division is a clearinghouse for information and for learning methods for effective presentation of the information. Dental health education programs for the community often are beyond the purview of the private practitioner. When confronted with the problem of educating the community regarding the advantages of early and regular dental care, for instance, many dentists would be at a loss as to where to begin. It is the responsibility of the public health dentist to be acquainted with the resources of mass media within the community and to be capable of selecting those for the practitioner which will be most effective.

The dental division provides services not available elsewhere, or those services which are prohibitively expensive when operated on an individual basis, but are well within the realm of reasonableness when operated on a community-wide basis for the dental profession by the dental division. An excellent example is the laboratory services for counts of acidogenic organisms in the saliva provided by the dental division in several states. There are other areas in which the dental division can provide assistance to the profession, but it seems appropriate to consider what assistance the dental society can provide to the dental division.

One of the primary factors to be considered in the planning of any program for the improvement of the dental health of the community is the determination of the number and the distribution of the dental personnel who will be available to bring the program to a successful conclusion. The dental society can provide the dental division with this up-to-date information. Such information is not available from any other reliable source. Other assistance which organized dentistry should provide to the dental unit is in the attainment of proper administrative and budget recognition for the unit and to assist in the conduct and operation of surveys to determine the state of oral health in the local communities.

BUDGET

Every act performed for the promotion of public health involves an expenditure of money, whether it be for supplies, for transportation, or for salaries of personnel. In fact, the very nature and extensiveness of the public health program are determined in the final analysis by the amount of funds available for its conduct.[5]

There are three primary sources of funds for the operation of programs of dental public health. They are tax-supported state and local agencies having an

interest in health, and federal agencies having similar interests.

State and local appropriations for programs of dental public health may be categorical; that is, limited to one activity, or may be a part of general health funds. The position of the dental unit in the administrative hierarchy oftentimes determines the ease or difficulty with which funds are obtained.

The federal funds which have been used for dental programs have been, for the most part, derived from the general health grants given by the Public Health Service to the states and territories. The Children's Bureau provides funds to the states through grants to programs for maternal and child health and programs for services for crippled children.[2]

The pattern established at the time of the enactment of the Social Security Act in 1935 whereby federal funds were made available to states for the operation of programs in dental public health is still followed in many states. Public health administrators and budget directors have not felt compelled to modify the budgetary position of the dental division from one supported almost entirely by federal funds to one supported largely by state appropriations. Is it not logical to ask the reason for the continuation of this status quo? Could the answer lie in the nearly universal distribution of oral diseases and their lack of drama and popular appeal when compared with some of the other areas of activity of public health? Could it be that the dental profession has been lax in making clear to the public and to public health administrators the true importance of the oral diseases as related to health, and the methods available for the amelioration of these conditions or their complete eradication? Those units primarily supported by federal funds are in a precarious position indeed, for a major reduction in federal funds by the next Congress could cause the discontinuation of the oral health programs with little or no warning.

It would be prudent for all persons and organizations interested in the continued progress of the program of dental public health to express their wishes in a manner which will bring about the desired change in budgetary position and support. Organized dentistry at all levels—local, state, and national—has bemoaned the failure of the dental divisions to attain the desired budgetary position in the hierarchy of the health department, but in many instances that has been the extent of their efforts to correct the situation. All segments of the dental profession should work together to demonstrate the importance of a comprehensive oral health program oriented realistically to the needs of the population to be served.

A dental division can be effective only when financial support for the program is from the taxpayers whom it serves.

The relation which exists between the dental division of the state department of health, the United States Public Health Service, and the Children's Bureau is one of mutual cooperation and assistance. Just as there are some procedures which are uneconomical or unfeasible for the private practitioner to provide for himself, there are certain procedures which are beyond the scope of activity of the dental division in the state department of health but are within the area of activity of these dental units of the federal services. The Public Health Service has dental consultants who are stationed in each of its regions, or in an adjacent region, who are available for consultation to the states on the receipt of a request for such services. The dental division of the state department of health provides information and cooperation to the regional consultant in all phases of the activity of dental public health. These facilities should be utilized by the practicing profession.

SUMMARY

In summary, then, the activities which now constitute dental public health are

not new—they have evolved during the past century and a quarter.

The dental division is a functional unit within the administrative structure of the department of health. Organized dentistry has recommended that the dental program be one of the basic health services of the state department of health.

The dental division has a three-fold responsibility to discharge: a responsibility to the dental profession, a responsibility to the public health agency, and a responsibility to the population served. The areas of activity include those which afford an indication of the extent of the problems, a notion of the most useful method for the reduction of the problem, and a means for the determination of the effectiveness of the program.

The scope and the extent of the program of the dental division will be directly proportional to the amount of funds which are made available for its operation. It is obvious that the most important factor in the determination of the effectiveness of the dental division of the department of public health is the relationship which exists between the dental division and the dental profession. Modern dental public health arose as the direct result of the activities of the members of the dental profession. The dental division of the state department of health is the result of the joining together of organized dentistry and official public health. It must not be forgotten that the cooperative support and assistance provided by these, the parent organizations, will determine the effectiveness of the dental division in its efforts to improve the health of the community by the improvement of the community's dental health.

GRANTS-IN-AID IN FEDERAL-STATE DENTAL PUBLIC HEALTH PROGRAM RELATIONSHIPS

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For the past 38 years federal grants-in-aid have been utilized for public health purposes by state and local units of government.[1] The historical development of the grant-in-aid principle as a means of providing financial assistance to governments with limited financial resources has been considered in detail by many students of public health administration.[1-5]

A current list of identifiable health grants would include those for maternal and child health and crippled children's services derived from Title V of the Social Security Act; the grants administered by the Public Health Service for the following purposes: general health services; venereal disease control; tuberculosis control; cancer control; mental health; hospital survey and construction; heart disease control; poliomyelitis vaccine distribution, and the basic support grants of the Office of Vocational Rehabilitation.

It is generally acknowledged that the grants-in-aid have been highly effective in stimulating the state and local govern-

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1. Mountin, Joseph W., and Greve, Clifford H. Role of grants-in-aid in financing public health programs. Public Health Bulletin 303. Washington, D. C., Government Printing Office, 1949.

2. White House Conference on Child Health and Protection. Public health organization; section II. Public health service and administration. New York, Century Co., 1932.

3. Mountin, Joseph W. Financing local health services—federal participation. Pub. Health Rep. 67:944 Oct. 1952.

4. Henlon, J. J. Principles of public health administration, ed. 2. St. Louis, C. V. Mosby Co., 1955.

5. Mountin, Joseph W.; Henkle, Emily, and Druzina, George B. Ten years of federal grants-in-aid for public health, 1936-1946. Public Health Bulletin 300. Washington, D. C., Government Printing Office, 1951.

ments to establish new health programs, to expand and improve existing programs, to raise standards and to secure and train more competent personnel.[3] The incentives afforded by joint effort toward those objectives has resulted in an effective working partnership of federal, state, and local health governments.[6] To secure grant funds, the health agency is required to spend its own funds for the same objectives as those supported by the grant fund. The ratio of these matching funds to grant funds is usually one dollar from state or local sources to two dollars from federal sources.

Under existing grant authority the state agency may determine, subject to approval by the federal agency concerned, whether grant funds will be used to support state administered services or whether they will be used for locally administered services.[3] State practice in this respect varies, dependent on whether the state provides a large degree of direct health services or furnishes financial assistance to the local health agencies for health purposes. In either case, the redistribution of grant funds by the state is modified by the ability of the local area to share the cost; the poorer communities receive relatively more aid in accordance with the basic objective of grants-in-aid.

In the allocation of grant-in-aid funds, in most instances, the law establishing the grant incorporates, in general terms, the method of apportionment. These terms, described as the "allocation procedure," apply to all forms of grants. A brief description of the project and variable allocation types of grants may serve to illustrate the most commonly used methods of distributing grant funds.

PROJECT GRANT ALLOCATION

To qualify for these grant funds, the state or community must submit a plan for the proposed project. This method of allocation is highly effective in the development of basic research and construction of physical facilities. The project grant places emphasis on initiative in developing projects and aids most the health agency which is willing and able to spend its own funds. The Hospital Survey and Construction Act of 1946, as Amended (Hill-Burton Act), provides an excellent example of the incentive afforded by project grants in the construction of hospital and other medical facilities.

The states were enabled through Hill-Burton grant funds to make surveys of their existing health facilities, and to develop comprehensive state-wide plans which designated areas and localities in need of particular kinds of facilities, assigning a priority to each. Applications for project grant funds were then invited from eligible sponsoring groups, organizations and agencies.

Each facility was built and equipped by a sponsor which paid from one third to two thirds of the cost, depending on the financial status of the state in which the project was located. The finished facility, while fulfilling the needs of the community in which it was located, at the same time made its contribution toward satisfying the over-all health facility requirements of the regional and state plan.

In the nine years during which this grant program has been in operation, 2,000 medical facilities of various types have been constructed. Total cost of these projects was $1,505,000,000, of which the sponsors paid $990,000,000, the federal share being $515,000,000. No monetary value can be estimated for the health benefits received by the populations served by these projects.

VARIABLE ALLOCATION

Wide differences exist in the states in the service requirements of programs and in

6. Mountin, Joseph W., and Flook, Evelyn. Guide to health organization in the United States 1951. Public Health Service Publication 196. Washington, D. C., Government Printing Office, 1953.

their ability to provide funds for even a minimum program. To meet this need, a variable allocation formula is required in order to compensate for these differences between states. The yardstick employed in the formula considers several factors which measure service requirements and fiscal capacity.

Population is used as an index of service requirements, and, when the benefits of the grant program reach every one, the total population is used. Under other circumstances, the population factor is restricted to those groups who would benefit from the grant.[1] Another factor involved in determining service requirements is the magnitude or intensity of the problem in the individual state.

Inclusion in the formula of measurements of the financial need and fiscal capacity of the agency receiving the grant also presents difficulties. The grant formula endeavors to distribute the funds so that a poor area is required to spend less of its own funds in order to receive relatively more grant funds. Per capita income is considered to be the best measurement of the relative ability of the states to pay for health services.[1]

A typical example of a grant program using a variable allocation formula of population, per capita income and extent of problem is the venereal disease control program. This is the oldest grant program, having been initiated in 1918.

Allotments of venereal disease control grant funds are made to the states according to a formula which provides that from 20 to 40 per cent of allotment shall be on the basis of population, weighted by financial need; and from 60 to 80 per cent on the basis of extent of the problem.

These funds have aided the state and local health departments to develop clinics for the treatment of venereal disease patients throughout the country. The number of such cooperative clinics rose from 656 in 1935 to 3,324 in 1946. During the last war the state and local health departments, by tracing and treating Selective Service registrants reported as infected, made many thousands available for military service. At the same time, rapid treatment centers were established with grant funds in 38 states for treatment of early syphilis. The new, rapid methods employed in these centers have reduced the treatment period for this disease from 18 months to two weeks, and for gonorrhea to a single visit. An important effect of this reduction in treatment time has been the decrease in the number of venereal disease treatment centers to 2,113 as of 1955.

GRANTS-IN-AID AND STATE AND LOCAL HEALTH SERVICES

Although it is sometimes difficult to assign credit appropriately, the following constructive developments occurred during the ten year period subsequent to the real beginning of grants-in-aid to states in 1936, the year in which the Social Security Act was passed:

1. Per capita state appropriations for health purposes increased for all states, rising from an average of 10½ cents to 26 cents. Total annual appropriations by states increased from $13,258,000 to $33,560,000. Meanwhile the amount of federal grants paid to states rose from about 7¾ million dollars to 11 million dollars annually. This would indicate that federal grants-in-aid, instead of retarding, stimulate the financial participation of state governments in health activities. The increased funds from both sources have been used to support the state health department structure and the activities conducted by state personnel. In addition, they provided financial assistance to local health units, laboratories, and special health projects operated by counties, cities, and other political subdivisions. During the ten year period, local appropriations for health purposes increased from 22½ to 59 mil-

lion dollars. The estimated expenditures from all sources by state health departments for dental activities underwent a concurrent rise from $37,000 in 1930 to $708,000 in 1946.

2. In the period 1940 to 1946, full-time personnel employed by state health departments increased from 10,128 to 12,414, an increase of 23 per cent. The number of full-time dentists, on the other hand, fell from 124 to 79, probably as the result of war-related handicaps in obtaining personnel. However, although the number of dentists decreased by one third, the funds expended for dental public health purposes increased almost twentyfold over expenditures in 1930. One possible explanation for this seeming inconsistency might be the growth during this period of local dental public health programs which absorbed funds from state and local sources without requiring additional state personnel.

3. There were only 18 state health departments with identifiable dental projects in 1935. Despite the prevalent shortage of dental personnel, the number increased to 35 by 1940 and to 39 by 1946. (At the present time all states but one, Arizona, have provision for state dental public health programs.) These state programs conducted educational activities, promoted and organized local dental programs, and provided dental consultation service to local health departments as well as to private dentists, dental hygienists, physicians, nurses, and others. Many states conducted surveys of selected population groups to determine the influence of certain factors on dental health. In a few instances, by financial assistance or by furnishing personnel, they provided special dental services to limited groups in the population.

GRANT-IN-AID ADMINISTRATION AND FEDERAL CONSULTATION

The legislative action creating a grant-in-aid, by the fact that conditions essential to its administration are embodied in the Act, sets forth the basis for administrative relationships between the governmental agencies involved. The consultant relationships resulting from this administrative requirement are concerned chiefly with plans, field services, and records and reports. These items constitute the basis for the establishment and conduct of the consultant services developed by the federal government for administering grants-in-aid.

The legislative provision requiring review of plans by the granting agency has some obvious advantages. One of these is the assurance of some degree of uniformity in program operation. Again, the quality of service is improved by the opportunity to exchange ideas and benefit from a broad range of experience and understanding.

Field services offer an opportunity for stimulation and encouragement on a collaborative basis in dealing with problem areas in the dental program.

The records and reports required by the granting agency offer an excellent means for joint consideration of the effectiveness of the program conducted by the recipient of the grant. In this regard, recent developments in dental program analysis indicate that the process of program evaluation is almost inseparable from program planning, once a program is under way. The basic document required of the states by the Public Health Service is termed the "State Public Health Plan"; however, a more objective, but unofficial, type of record for setting forth the state dental program plan has been developed during recent years.[7] This plan record, although not required, has the advantage of incorporating procedures for program evaluation and is in use in many of the states.

7. Knutson, J. W. Accomplishments that may be achieved and methods of evaluating local public health dental programs. Am.A.Pub.Health Den. Bul. 13:1 Feb. 1953.

ROLE OF FEDERAL DENTAL CONSULTANTS

Consequent to the utilization of federal grant-in-aid funds in state dental programs, the federal government provides technical and consultant dental personnel to carry out its function in the administration of the grant funds.

The principal structure through which these responsibilities are conducted at the federal level is composed of the dental advisory services of the Children's Bureau, and the Bureau of State Services and its Division of Dental Public Health, where dental public health activities are centralized within the Public Health Service. Regional offices constitute extensions of the Bureau which maintain intimate functional relations with the states. Consultant dental personnel, under the technical supervision of the Division of Dental Public Health, staff the regional offices and maintain working relations with their counterparts in the state health departments.

These consultant personnel are responsible for the conduct of functions related to the administration of grant funds of the Public Health Service. In addition, they act as technical consultants to the nondental regional representatives of the Children's Bureau. They serve also as consultants at the regional level to the construction grant program of the Division of Hospital and Medical Facilities of the Bureau of Medical Services, Public Health Service, and to other regional consultant personnel.

Unrelated to grant administration functions, but carried out as a function derived from basic Public Health Service legislation,[8] the regional dental consultants, both independently and in cooperation with state and local dental program personnel, conduct investigations of the extent and nature of general and specific dental problems. They determine resources available for dental public health application and encourage their use in combatting the dental health problem; and cooperate with state and local health, education, and other activities in the conduct of projects in dental public health.

NONDENTAL GRANT-IN-AID FUNDS AND DENTAL PROGRAMS

There are a wide variety of federal grants-in-aid for health purposes. Although none of these grants provide specifically for dental activities, the objectives of several are sufficiently broad to permit use of their funds for dental programs in the states.

Under provisions of the maternal and child health grants-in-aid, a large number of state dental public health programs have been established since 1935. At the present time, 41 state dental programs utilize these funds, amounting to approximately $800,000 annually, for administration and operation.

Cancer control grant funds allotted to state health departments are used to conduct institutes and seminars on oral cancer for practicing dentists, and to produce and distribute literature on oral cancer.

The Assistance to States General grants-in-aid of the Public Health Service is used to the extent of about $100,000 annually for basic services in seven state dental programs.

The total expenditure for state dental programs budgeted for the 1954-5 fiscal year was $2,133,443. Of this amount, approximately 42 per cent came from grant-in-aid programs administered by the Public Health Service and the Children's Bureau.

INADEQUACIES OF NONDENTAL GRANTS-IN-AID

Because of the lack of earmarked federal grant funds, state dental programs have

8. The Public Health Service Act (58 Stat. 682, 42 USC 201 et. seq.): as amended.

had to rely mainly on other federal categorical grants with dental-related aspects for funds to supplement the fiscal support of state appropriations. Although, in some states, there is an earmarked state appropriation for the dental program, state appropriations for general health purposes create a situation in which the dental program must compete on unfavorable terms with other health activities for a share of limited state health funds.

Frequently the noncategorical general assistance grant funds are exhausted by the basic administrative and program requirements of the state health department, leaving little or none for those categorical health programs which possess no specific grant funds. This inadequacy in financial support results in serious restriction in the scope and emphasis of state dental program activities. The skeletal staffs which exist in many state dental programs are unable to devote more than lip service to the dental aspects of chronic illness, dental problems of the aging, topical fluoride programs and the promotion of fluoridation. Also, technical competence at the state level should be available to aid communities in the development of local dental programs. With few exceptions, understaffed state dental programs are unable to provide this assistance. Furthermore, state programs to a large extent are not able to make essential, basic, comprehensive studies of the nature and extent of their dental health problems, from which to develop methods for the prevention and control of dental diseases.

Exceptions to the foregoing do exist in such states as Tennessee and Michigan, where sizable appropriations of state funds augment funds available from grant sources. In these states the range and extent of dental public health activities have been substantially increased by the addition of dental personnel to the state staff.

All-in-all, the lack of adequate funds is a major deterrent to development of state dental programs. The small fraction of total health funds available from current sources for dental public health programs clearly indicates the potential value of a categorical dental grant in stimulating growth of dental activities at the state and community levels.

USE OF CATEGORICAL DENTAL GRANTS-IN-AID

It is expected that a special grant-in-aid appropriation for dental health purposes would be used by the states to support and strengthen such basic dental public health services as:

1. Training of dental division staff members and private dentists who participate in the dental public health program.
2. Health education programs and studies of methods to make more effective the interpretation of the benefits of good dental health to the public.
3. Establishment and maintenance of community dental service clinics.
4. Promotional programs designed to interest communities in the application of effective methods and procedures for the control of dental diseases.
5. Addition of personnel for the conduct of topical fluoride programs in rural areas.
6. Provision of expert consultation and guidance to local dental programs in utilizing effective technical and administrative procedures.
7. Specific research studies such as those directed toward investigation of epidemiological characteristics of dental disease or in administrative research directed toward the solution of operational problems.
8. In-service training for state or local personnel.
9. Utilization of undergraduate dental students in program operations as a recruitment device, to expand their interest in dental public health work, and

increase the number of dental public health workers.

10. Technical guidance and assistance to teacher training schools in strengthening dental phases of health teaching.

More extensive utilization of grant-in-aid funds for dental program purposes would permit the addition of dentists and other professional persons to the staffs of state and local health departments to meet the demand for services where such demand already exists, or to stimulate interest in dental activities where none exists. At the present time, no other means for providing adequate, essential community support seems available.

SUMMARY

The federal grant-in-aid system is a method devised for the purpose of equalizing, between the poorer and the more wealthy states, the burden of financial support for state and local governmental health services. This procedure provides proportionately more assistance to the poorer states where fiscal resources are inadequate. In so doing, the grants system has been effective in stimulating the establishment of new health programs, expansion and improvement of existing programs, raising standards of operation, and in securing and training competent personnel.

Funds are allotted to the states in the form of grants, and are then reallotted to local health agencies or expended in direct state services. Matching funds from state and local sources are required to obtain grant funds.

The granting agency influences the grant program by requiring that the grant recipient adopt certain minimum standards for program administration and operation and spend the funds for the purposes for which they were appropriated. In the functioning of federal-state relationships derived from the administration of grant-in-aid funds, considerations focus on plans, field services, and records and reports. The performance of these administrative functions by the federal government constitutes the basis for the establishment and conduct of consultant services to states. Regional dental consultants and their staffs fulfill this responsibility in the regional office of the Public Health Service, affording opportunities for working relationships with state and local dental personnel in joint consideration of dental public health programs. Because of this administratively derived relationship, the conduct of dental public health programs becomes a working partnership of the three units of governmental health service.

State and local dental public health programs are dependent for financial support, from other than state and local sources, on several nondental grants-in-aid. Justification for obtaining funds from these grant sources is based on the dental aspects of the health problem for which the grant was appropriated. The inadequacy of funds from these sources is evident, and points to the need for increased dental program funds from grant sources.

There are many constructive purposes to which additional grant funds could be devoted.

From the foregoing observations it should be apparent that grant-in-aid funds are an essential factor in providing financial assistance to states for the purpose of stimulating the establishment and conduct of public health programs, and for stimulating increased state and local appropriations for health purposes. Although dental public health programs have shared in this process, and have undergone a degree of development and expansion since the general application of the grant principle was initiated in 1935, there is considerable room for additional progress and improvement in this area of federal, state, and local relationships.

DENTAL HEALTH CARE IN PUBLIC ASSISTANCE PROGRAMS

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Public welfare departments appear to have a number of problems and questions arising in the administration of the dental care aspects of their health service programs. It might be helpful to give a little background before discussing the dental care problems specifically.

GOVERNMENTAL RESPONSIBILITY

Government's responsibility to assure the availability of personal health services to needy persons is now generally accepted in principle, if not always in practice. The Inter-Association Committee on Health, representing the American Dental, Hospital, Medical, Nursing, Public Health and Public Welfare Associations, has supported this principle in at least two official statements. The Joint Committee on Medical Care, representing the American Public Health Association and the American Public Welfare Association, has likewise stated that government should translate this important responsibility into programs of personal health services for needy individuals and families. Most recently the Joint Conference Committee on Medical Care for the Indigent, representing five of the national organizations concerned with this problem, including the American Dental Association, developed a statement of principles entitled "Tax-Supported Personal Health Services for the Needy" which again sets forth this responsibility of government.

For the American Public Welfare Association, this is nothing new. Since the Association's early years, its board of directors and membership have recognized that essential personal health services, including dental care, are a basic requirement for needy persons, and that it is the responsibility of public welfare departments to determine that such services are available to their clients. If the community, through other services and facilities, does not provide these, then the Association has always held that public assistance funds may appropriately be used to enable the recipient to purchase or have purchased for him such essential services. Public assistance agencies, in carrying out this responsibility, have a concern that the health services they authorize and pay for shall to the fullest extent possible meet acceptable professional standards. The quality of service available to needy persons will depend, of course, on the quality of care that prevails in the community for the general population.

WHO ARE THE NEEDY?

Perhaps the public assistance programs should be reviewed to determine who the needy are, and what kind of people these are who require physicians' services, dentists' services, hospital care, and the many other components of a program of personal health services.

A large number are the persons who are helped through the program in which the federal, state, and sometimes local governments cooperate in the planning and financing. These are the recipients of aid to the blind, aid to dependent children, aid to the permanently and totally disabled, and old age assistance. The names of these programs may be slightly different in different states, but most states now provide for these four categories, although a few still do not have a program of aid to the permanently and totally disabled.

In addition, there is the "catch-all" program known as "general assistance."

Medical care consultant, American Public Welfare Association.

This is financed in a variety of ways—sometimes by state funds alone, sometimes by local funds alone, and sometimes by a combination of the two. The federal government, however, does not participate in this program and has no authority with respect to it. People receiving assistance under this program are the ones who do not qualify technically, although they may be equally needy, for the categorical programs previously mentioned.

Finally, there is assistance to the medically indigent which in some states is so designated officially, but in others, if carried on at all, is merely an extension of the general assistance program.

HEALTH PROBLEMS AND FINANCIAL DEPENDENCY

Many persons are forced to turn to the assistance agency primarily because of their health problems and their need for care. Twenty years ago, in the depths of the depression, most recipients of assistance were employable. Currently, persons benefiting from the assistance programs are likely to be unemployable and to have unusually heavy medical needs. For example, of the two and one-half million recipients of old age assistance, about one-half million are bedridden or require a substantial amount of care from others because of some physical or mental impairment. In addition, a high proportion of the other two million recipients of old age assistance, although able to care for their own daily needs, nevertheless have health problems which require medical care. The average age of old age assistance recipients is 75. If long-term illness strikes, as it so often does in this age group, it almost inevitably requires expensive institutional care or special arrangements in the home.

Almost a quarter of a million persons are receiving aid to the permanently and totally disabled and, obviously, are in need of some sort of medical care.

Of the 100,000 persons receiving aid to the blind, many are in the older age group and have the same kind of health problems as old age assistance recipients, as well as being in need, in many instances, of highly specialized eye treatment. Almost one-half million persons are receiving aid to dependent children because of need resulting from the physical or mental incapacity of a parent. In the general assistance program, many states require that persons have some illness or disability which makes them unemployable before they can become eligible for this form of help.

FINANCING HEALTH SERVICES FOR THE NEEDY

Because of the characteristics of the groups described, and because of increasing recognition on the part of public welfare administrators of the importance of health services, there have been increases in both the volume and cost of health services in the public assistance programs. This has been true despite the fact that the laws creating public assistance programs frequently are so worded that they indicate the administrative agency has a primary responsibility for maintenance needs—food, shelter, and clothing. Too often medical care is not mentioned specifically in the state laws or appropriations relating to public assistance. For these reasons the public welfare administrator is caught between his responsibility for meeting the maintenance needs of recipients and providing an adequate reimbursement to the sources of health services.

Administration of public assistance programs in many of the states has long been hampered by inadequate appropriations. This has affected size and quality of staff, average grants to individuals, and the amount of health services financed through public assistance funds. In addition to the limited state appropriations for public assistance in some places, federal financial participation in the four

categorical assistance programs is limited by maximums established in the federal law. These maximums in the matching formula are particularly troublesome when applied in instances where medical care is required. It is for this reason that the American Public Welfare Association—and, I understand, the American Dental Association—has supported the Reed-Cooper bills in the House of Representatives and the Martin bill in the Senate, which require the federal government to match 50 per cent of the amounts spent by the states for health care through vendor payments, up to $6 a month times the number of adult recipients and $3 a month times the child recipients. The APWA does not believe this amount of money is enough to provide all essential health services, but it would certainly be an improvement over the present federal matching limitations. The APWA believes, too, that it would encourage some of the laggard states to do a much better job than they have heretofore.

To illustrate the terrific variations in expenditures by the states for health care of persons receiving categorical assistance, some figures are listed. These figures were compiled by the Department of Health, Education, and Welfare for the year 1953. Although these figures are not current, the indications are that there has been little change since that time, and that current costs are not too much greater. The estimated average annual expenditure for medical care per recipient in the states paying for medical care breaks down as follows:

Less than $12 per year—10 states
$12 to $24—10 states
$24 to $48— 9 states
$48 to $72— 6 states
($72 is the point at which the proposed federal maximum on medical care matching would be. As can be seen from these figures, there are 35 states not now spending even this much.)
$ 72 to $ 96—3 states
$ 96 to $120—4 states
$120 to $168—3 states

This listing excludes the states of Washington and Maryland where, in the year 1953, public assistance recipients undoubtedly received comprehensive personal health services through public medical programs administered by the public health department. These figures also exclude six other states which in that year made no payments for medical care through their public assistance programs and were dependent on other resources in the state and the locality.

These variations may be illustrated further by the fact that the American Public Welfare Association, in a study also made in 1953, found that there were only 15 states where the use of state public assistance funds for the provision of health services for recipients was not limited by a maximum of total monthly assistance or by an inadequately defined state-wide standard of essential health services.

DENTAL SERVICES

As mentioned at the beginning of this article, the provision of dental care is not handled too well in public welfare programs, at least not as well as the American Public Welfare Association thinks it should be handled. This is not necessarily the administrator's fault. A few of the areas may be reviewed, and it may be seen perhaps, that the dental profession bears a share of responsibility for this.

Professional advice is not obtained and used as it should be. No public welfare administrator, particularly in the field of health services, can operate in a vacuum. He needs appropriate professional advice, not only to help him develop the content of the program and administer it, but for purposes of interpretation and public relations. In the 1953 APWA study, however, when the use of health

advisory committees by the state welfare department was reviewed, it was found that these were not in general use. At that time only 15 states had functioning advisory committees. These were of various types, such as general committees with representation from many fields, committees on physicians' services, committees on dentists' services, hospital care committees, and so on. It was found that there was a definite tendency in the states to secure advice most frequently from organized medicine, as demonstrated by the fact that a committee of physicians was reported by 13 states, but only 7 states had committees of dentists.

Undoubtedly many of the other administrators had informal working relationships with executive secretaries of medical and dental societies, or perhaps even with his own dentist, when a knotty problem arose in the office. But this hit or miss kind of arrangement is not going to insure that the dental program in the public assistance agency is properly developed, staffed, and administered, or that the clients for whom the agency has responsibility are receiving, within the legal and financial limitations of the program, the most essential dental services. It should be considered though, whether, in some of the communities, the dental group is ready to give the time, on a voluntary basis, that would help the local or state administrator to do the kind of job he should be doing. Maybe he has not asked the dental societies for help, but has it ever been offered to him?

Workers in public welfare do not do too well in deciding what is essential in dental care. They go from one extreme to the other. In the 1953 study, only 28 states reported that state funds were available for dentists' services to public assistance recipients. This is out of a total of 48 states, the District of Columbia, Alaska, Hawaii, Puerto Rico, and the Virgin Islands—53 jurisdictions in all. Just slightly more than half could give any assurance to the recipient of public assistance, then, that no matter where he lived in the state he would get essential dental care. But even within this group, only 14 of the states reported that they set standards of quality, quantity, or cost for dental health service items provided from public assistance funds. This means that, in general, the decision as to what kind of dental care would be financed and who might be paid for it was left to the localities. It is certainly true that in meeting the requirements of needy people the administration should be as close as possible to the individuals; however, great variations have been found in the past between the many localities in the state when there is no leadership from a state agency and no encouragement to develop good standards.

It should be mentioned here, however, that the listing of priorities in dental services for children and adults, developed by the American Dental Association, has been of inestimable value to those public welfare departments that have sought a sound basis for deciding what services they should provide when their funds do not permit them to give all dental care that might be needed by the individual recipient. This classification of priorities has been a real contribution to the improvement of dental care programs for needy persons. A number of manuals or handbooks of policy developed by public welfare departments cite these priorities, giving credit to the American Dental Association.

Finally, public welfare workers often are not fully aware of the relationship of dental health to total health. Here, not only is the public welfare administrator responsible, but in addition, the dental and medical professions have perhaps not made this as clear as they might. The dentists may tell each other about this, but when they provide advisory service to the public welfare administrator, do they talk about this, or do they talk about the fees for dentures, for roentgenograms, for prophylaxis?

EXAMPLES OF PUBLIC WELFARE DENTAL HEALTH PROGRAMS

There is not enough space to give many examples of ways in which public welfare departments meet the dental needs of their clients. Frankly, there are not too many that can be cited as good examples, but here are a few.

In Rhode Island, the State Department of Social Welfare says that it cannot hope to pay for the correction of every dental defect or to provide luxury dental appliances for services. It wants to give minimum adequate dental care, however, and it follows the A.D.A. priority classification as a general guide. This Department has its health services program administrated by a medical director, who is assisted on a part-time basis by a dentist as well as other professional staff. There does not appear to be undue restriction of dental care, yet the amount expended and the number served are somewhat small. For example, only 5.5 per cent of the total expenditure for health services for public assistance recipients goes for dental care. Within each of the categories, the following percentages of recipients received dental care during one year: In old age assistance, 4.6 per cent; in aid to the disabled, 11.5 per cent; in aid to dependent children, 9.6 per cent; and in aid to the blind, 9.9 per cent. An over-all average of 7.8 per cent received dental services during the fiscal year 1954-1955. Similarly, expenditures per eligible recipient (not per person receiving dental service) averaged $2.30 per year in the old age assistance group, $7.51 per year in the aid to the disabled group, $3.18 per year in the aid to dependent children group, and $5.11 per year in the aid to the blind group, or an over-all average of $3.13 per year per recipient of assistance during the year.

In the State of Washington, where a year ago the administration of the health care program was transferred from the State Department of Health to the State Department of Public Assistance, the Washington State Dental Service Corporation cooperates with the state agency in administering the dental health care program.

This state has a pattern of working in this way with the professional groups and has found it to be generally satisfactory. Central records on dental treatment are maintained by the Dental Service Corporation, and after the completion of work, a random sample of 5 per cent of the patients is checked to determine the quality of treatment given. This program is relatively new, so valid figures cannot be cited on the incidence of care and the cost. In the preceding biennium, however, dental costs constituted 3.4 per cent of total health expenditures, which is considerably less than that in Rhode Island. At that time there was not a statewide system, so that some counties provided almost complete dental care for children and older persons, including expensive prosthetic appliances, while other counties did not even provide adequate dental care for children. This question of dentures is always a knotty one for the public welfare administrator to solve. If he provides them for all the individuals who are edentulous, his funds will be exhausted before other services, much more essential, are given.

CONCLUSION

In summary, then, personal health services, including dental care, are recognized as essential components of even a minimum standard of living and, hence, are basic necessities for assistance recipients. Government responsibility for providing the unmet health service requirements of the needy has been accepted in principle. How this is done depends at any given time and at any given place on governmental structure and laws relating to assistance and health services, on the development and interest of public and voluntary medical agencies and health

programs, and on traditional patterns of locality or state. There can be no one method applied over the nation.

In practice, however, acceptance of governmental responsibility does not always mean that the health requirements of the needy are met. This may be because of insufficient financing, lack of preventive health services, overlooking the need for good quality of care and a comprehensive scope of services, lack of leadership from the state level, and lack of qualified personnel in medical administrative posts.

Community agencies and professional groups alike must take steps to organize health services in ways that will bring improvement in quality, more effective coordination of services provided by public and private agencies, and recognition that problems of health services for the needy and the medically needy cannot be solved apart from the problem of health services for the whole population.

Finally, the public welfare administrator does not make the laws and does not make the final decision on the amount of the appropriation for his public assistance programs. He may propose both the laws and the appropriation, but the legislature or other appropriating body disposes—all too frequently disposing of his recommendations. The welfare administrator must make ends meet. Perhaps his decisions are not always what is desired. Perhaps, in defending them, he does what is so often done when a person is placed in a defensive position—he criticizes the other fellow. If both the public welfare administrator and the professional groups can realize that this is a mutual problem, and that it can only be worked out by joint understanding and joint efforts, then not only the welfare agency and professions will benefit but the recipient, the person in need of health care, will be more likely to receive what he needs when he needs it.

RELATION OF STATE LAWS TO DENTAL HEALTH SERVICE CORPORATIONS

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Every corporation is a creature of statutory law; the right to incorporate in this country must proceed from a statutory right. One type of corporation with a distinctive purpose is of particular interest to the dental profession—a corporation to act as an intermediary between dentists and groups of patients to arrange for the furnishing of personal dental health care to the groups by the dentists.

HEALTH SERVICE CORPORATIONS IN GENERAL

The medical profession has had a long experience in the development of medical service plans. Today, the Blue Shield type of medical care plan is looked on as the leader in its field. The Blue Shield plan in practically every state operates under a special enabling law. The essential feature of the Blue Shield incorporation statutes is that no such corporation can readily come into existence or can operate effectively without the cooperation and support of the medical profession. The Blue Shield plans are governed by members of the medical profession. They do, however, provide for some lay represen-

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tation on the managing agency—its Board of Directors or Trustees.

In Illinois, the special statute which governs the Blue Shield plan does not permit the incorporation of a nonprofit medical care plan unless the majority of the incorporators are physicians licensed to practice in Illinois. The Board of Trustees for each incorporated plan must have a majority of its membership composed of Illinois licensed physicians; they are elected by the participating physicians. The remaining members of the Board may, but need not be, physicians; they are elected by the subscribers to the plan.

Until recently, the control of the Illinois medical profession over the incorporation of medical care plans was, for all practical purposes, complete. In 1952, however, the Illinois Legislature enacted another separate enabling law for "Health Service Plan Corporations." The 1952 law permits lay persons to establish a health service plan corporation, medical or dental, to provide medical, dental, and related services to subscribers of the plan. Under the 1952 enabling statute for health service plan corporations, the corporation's Board of Trustees need have only 30 per cent of its membership from the health professions, and they must be licensed physicians.

The trend toward opening the way for the creation and control of health service plans by lay groups is gradually gaining ground. In Illinois it was furthered by legislation. That is not always necessary.

LAY GROUPS AND HEALTH SERVICE PLANS

In 1954, the Supreme Court of California ruled that a nonprofit medical service corporation could be formed legally under the general provisions of the California nonprofit corporation statute. This ruling was handed down despite the fact that there was a special provision in the statute for the incorporation of health service plans. The special provision has safeguards which practically assure that control of a medical or dental health service corporation will be under the medical or dental profession, as the case may be.

The California Supreme Court decision is entitled *Complete Service Bureau v. San Diego County Medical Society*. The court decided that the language in the special incorporation provision did not exclude the formation of a medical service plan under the general nonprofit statutory provisions. The court seized upon the words (within the special section) "a nonprofit corporation may be formed" to indicate that there was no requirement that the special provision must be the exclusive authority for incorporating medical service plans. The court was also aware that prior to the enactment of the special enabling provision for health service plans, there was a history of incorporation of such plans under the general provisions of the nonprofit corporation statute. In California, there is at least a precedent to support the right to form a lay sponsored and controlled nonprofit dental health service plan, the medium being the general provisions of the nonprofit corporation statute.

In October of 1955, the Secretary of State for the State of Minnesota requested the Attorney General of that state to give an opinion on the right of a lay group to organize a medical and dental health service corporation under the Minnesota general nonprofit corporation statute. It must be kept in mind that an Attorney General's opinion on the application of state laws is advisory and need not be upheld if and when that opinion is tested by the courts. The opinion of an Attorney General, however, is ordinarily the product of comprehensive research and must be given considerable weight. The Minnesota general nonprofit corporation statute, among other objectives, applies to the organization of a nonprofit venture dealing with health. That general statute, however, does specifically exclude

from its application "nonprofit medical service plan corporations." (There is no specific Minnesota statute for incorporating dental health service plans.) Despite the fact that the establishment of a medical care corporation seems clearly limited to the special enabling law in Minnesota, the Attorney General ruled otherwise.

Earlier, I emphasized that the Blue Shield plan enabling laws include some type of statutory device for assuring control over the plan by responsible elements within the medical profession. The Minnesota statute accomplishes that objective by permitting only physicians to form medical care plans incorporated under the special enabling law. The Attorney General of Minnesota states in his opinion that a medical care plan organized by lay persons is legally distinct from a medical care plan formed by physicians. The arguments he presents, moreover, are reasonable. He concludes, therefore, that a medical and dental health service corporation could be organized by lay persons under the general nonprofit corporation statute of Minnesota. It must be kept in mind that in many states there is a history of limited health care plans incorporated under the general nonprofit corporation law. In many instances those corporations were organized before the special enabling laws for comprehensive hospital and medical service corporations were enacted. That is true in Minnesota and is relied on by the Attorney General to bolster his opinion. It should also be kept in mind that the absence of a special law for incorporating dental health service plans in Minnesota might mean that there would be little legal ground for an objection to establishing a lay-sponsored dental health service plan under the Minnesota general nonprofit statute.

STATE LAWS AND DENTAL HEALTH SERVICE CORPORATIONS

It has already been noted that California and Illinois specifically authorize the establishment of nonprofit dental health service corporations. The great difference between those laws is that the California statute assures professional control of the plan; the Illinois statute does not. Research on this phase of the subject indicates that the laws of Montana, Maryland, New York, Pennsylvania and Washington also have clearcut provisions for the establishment of dental health service corporations. The only one of these which resembles the usual Blue Shield statute for medical care plans is the recently enacted Pennsylvania law which shall be discussed separately.

The Montana nonprofit corporation law includes a provision almost identical with that of the special enabling provision within the California law. Both states specifically authorize the incorporation of nonprofit dental health service plans, the major condition of incorporation being that one fourth of the state's licensed dentists must agree to participate in the plan. The Montana law, however, effectively prohibits the establishment of a dental health service corporation under any other section of the nonprofit corporation statute. As described earlier, a nonprofit dental health service plan probably could be incorporated under the general California nonprofit provisions.

The Maryland statute authorizing the incorporation of nonprofit dental health service plans is within the Insurance Code. Any nonprofit dental health service corporation must conform to the special statute. The Maryland Insurance Commissioner regulates all nonprofit health service corporations, and there are strict requirements to be met before corporate status is granted. In effect, the health plan must be ready for operation before a corporate charter will be granted.

The New York statute which specifically applies to nonprofit dental health service corporations is also within the state's insurance laws. The enabling statute authorizes the establishment of

nonprofit dental expense indemnity corporations to "be maintained and operated for the benefit of . . . members and subscribers as a cooperative corporation." The New York law treats the operation essentially as insurance functions and requires among other obligations the establishment of an adequate reserve.

RECENTLY ENACTED PENNSYLVANIA LAW

The Pennsylvania State Dental Society recently sponsored legislation which specifically authorizes the establishment of nonprofit dental health service corporations. The legislation was enacted late in 1955. The new statute has the essential safeguards to assure that dental health service plans in that state will be controlled as far as possible by organized dentistry. It includes the following features:

1. A provision requiring that the majority of incorporators must be dentists.

2. A provision requiring that the majority of the managing group must be dentists.

3. A prohibition against operating a nonprofit dental health service plan unless the plan is incorporated under the special enabling provisions of the nonprofit corporation law.

4. A provision declaring that the powers of the state agencies which will regulate dental health service corporations do not go beyond those set out in the special enabling statute.

5. A provision requiring that all licensed dentists of Pennsylvania must be eligible to participate in any dental health service plan and that freedom of choice is to be assured for both dentists and subscribers.

6. A provision requiring that controversies involving professional services or ethics must be referred to representatives of the dental profession for disposition.

The relation of state laws to dental health service corporations is in most states very dimly defined. Without some measure of demand for group dental health care plans, it is difficult to determine how a dental society should proceed in this area. I shall, however, make this suggestion. If a constituent society decides that there will soon be a need to establish a dental health service plan for groups within its bounds, that society should give strong consideration to obtaining the enactment of a special enabling law for nonprofit dental health service corporations. Within that law there should be provisions that will assure that only responsible elements within organized dentistry will be entitled under the special statute to initiate and control dental health service plans and, of equal importance, that the initiation of nonprofit dental health service plans under general nonprofit corporation laws by lay groups will be prohibited or at least stringently limited.

THE DENTAL HEALTH SERVICE CORPORATION FROM A LAWYER'S VIEWPOINT

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When a lawyer is approached with the question "May we organize a corporation for the purpose of providing prepaid dental health service?," two doubts immediately assail him. Would not the activity of such a corporation be within the traditional and generally recognized prohibition against the practice of a profession by a corporation? Professional men are all aware, I believe, of the reason for this prohibition and generally subscribe to its validity. May, then, a dental health service corporation be organized without first securing authorization by special legislation?

Before the question can be answered intelligently, I believe it is necessary to determine what this corporation is expected to do, what its function will be within the voluntary health plan. The dental practice acts of most states expressly prohibit the offering of dental service by a corporation; but, excepted from the prohibition are the following: (1) a corporation which offers such service to its employees free of charge, (2) a corporation by which the services are offered on a purely charitable basis, and (3) a corporation which offers to licensed dentists a service of a kind which may be performed lawfully by an unlicensed person providing the dentist assumes full responsibility for the service.

It would seem, therefore, that if a corporation were organized to offer dental service, on a prepayment or other basis, to members of the public generally or even to an homogeneous group such as the membership of a labor organization, such corporation would be in violation of the practice acts. Such clearly would be the situation where the corporation employed dentists on a salaried basis to render dental service to the corporation's "patients."

A rather fine distinction may be drawn, however, between such organization and a plan under which the corporation is to act merely as an intermediary between licensed dentists and individual members of the public or groups, a plan under which the service corporation enters into contracts on an agreed fee-for-service basis with a limited or unlimited number of dental practitioners and then further contracts with individual and group subscribers to pay cooperating dentists for professional services rendered subscribers in consideration of payment to the corporation by the subscriber of a predetermined amount of money. It may reasonably be urged, I think, that the activities of such a corporation are of strictly a business nature, do not involve practice of dentistry by the corporation, and therefore do not contravene the prohibition in the practice acts.

Whether such a plan, particularly if operated on a closed-panel basis, would do violence to the traditional and possibly democratic conviction that a paying patient should have the privilege of choosing his own dentist or physician and that, conversely, the practitioner should be free to choose whom he will treat is another question, but one having no necessary relationship to the legality of the corporate activity. Parenthetically, too, it might be noted that if such a service corporation is not engaged in the practice of dentistry the scope and nature of its activities would be governed solely by the statute under which it was created, its own charter and bylaws; and it would not, at least directly, be subject to the will of the dental association or canons of ethics, such as the one relating to advertising.

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But, assuming, then, that such a corporation would not be engaged in the practice of dentistry, would it not be engaging in the insurance business and hence subject to the generally rather stringent regulation of the state insurance department? This very question has been litigated in California in connection with the operation of a not-for-profit corporation organized under the name of California Physicians' Service.[1] This corporation acted as a service agent between the members of the medical profession and groups desirous of subscribing to the plan. The physicians agreed with the corporation to render medical service on a determined fee basis to subscribers to the plan, and the subscribers were required to pay a specified amount to the corporation in return for which they would receive the necessary medical care from a member physician without additional cost to the subscriber. The state insurance commissioner contended that the corporation actually was engaged in the insurance business and was therefore within the regulatory provisions of the insurance code.

The Supreme Court of California ruled against the commissioner. The court first pointed out that although the subscribers to the plan were guaranteed the prescribed medical service without cost to them beyond their payments under the plan, the risk of excessive cost was in fact borne by the participating physicians since the corporation was not obligated to pay the physicians beyond the limits of the fund collected from subscribers. Hence, the effect of holding the corporation to be within the regulatory control of the insurance statute would be to require the establishment of reserves contrary to the essential purpose and method of operation of the plan. But then the court proceeded to justify its conclusion on a broader basis, saying:

> There is another and more compelling reason for holding that the service is not engaged in the insurance business. Absence or presence of assumption of risk is not the sole test to be applied in determining its status. The question, more broadly, is whether, looking at the plan of operation as a whole, "service" rather than "indemnity" is its principal object and purpose. . . . Certainly the objects and purposes of the corporation organized and maintained by the California physicians have a wide scope in the field of social service. Probably there is no more impelling need than that of adequate medical care on a voluntary, low-cost basis for persons of small income. The medical profession unitedly is trying to meet that need. Unquestionably this is "service" of a high order and not "indemnity."

It would seem, therefore, that a dental health service corporation, functioning merely as an administrative entity between the practitioners on the one hand and subscribers on the other, would neither be practicing dentistry nor engaging in the insurance business. Certainly there is nothing illegal, or, I believe, unethical, in a dentist contracting with a patient to perform all necessary dental service for that patient over a specified period of time for an agreed prepaid amount. Whether such a program or plan, if it were employed by a dentist as to the majority of his patients, would be economically and financially practical either from the dentist's or the patient's point of view would depend on data not particularly relevant to the subject being discussed. So, too, would the answer to the question whether such a plan would eventually lead to the rendering by the practitioner of inferior dental health service. But regardless of the answers to such questions, it seems evident that the primary activity of the corporation envisioned is but the arranging of such agreements between a number of practitioners and a number of patients and should, therefore, be equally within the law.

Speaking only as an attorney, however, I would recommend that dental associations undertake to secure special legisla-

1. California Physicians' Service v. Garrison (1946), 28 Cal. (2d) 790.

tion authorizing the creation of dental health service corporations in those states where such legislation does not already exist. Such statutory authorization, if properly drafted, would eliminate all doubt as to the legality of purpose of such a dental health service corporation, and would avoid the expense and uncertainty involved in any litigation.

ADVANTAGES OF CORPORATE FORM OF ORGANIZATION

In considering corporate organization, it must first be recognized that the law (or the state) regards a corporation, whether formed for profit or not for profit, as an entity separate and distinct from its shareholders, members and its management. In other words, it is a legal being endowed with many of the rights and burdened with the corresponding obligations of an average adult human being. It is this concept of separateness, of legal entity, which enables the corporation to act as an insulator between its creditors and its shareholders or members.

If an individual engages in business, in the practice of a profession, or even in charitable activity, personal obligations are incurred, either voluntarily as in the case of any sale, purchase or other contract made, or involuntarily as exemplified by the requirement that reasonable care be exercised to protect others. The same result follows if several individuals were to form a partnership to engage in business, practice their professions, or engage in charitable activity. So far as third parties were concerned each partner would be personally responsible for obligations incurred by the partnership. On the other hand, the same individual or group of individuals may avoid personal financial responsibility by engaging in the same business or charitable or other authorized activity under corporate form. This safety factor is itself, in many instances, sufficient justification for incorporation.

Another advantageous characteristic of the corporate form of organization is the continuity of its existence. Unlike a partnership, a shareholder, even the sole shareholder, the chairman of the board of directors, the president, any one or all of them, may die or withdraw but the legal entity that is the corporation continues. This, of course, is not to say that changes in management personnel may not bring about a radical change in policy and in administration; but in the eyes of the law the legal entity remains unchanged. Although it was not always thus, the great majority, if not all, modern corporation statutes permit a corporation to be organized in perpetuity, in which case its existence will terminate only by voluntary dissolution on the approval of all or of a substantial majority of its shareholders or controlling members, or, involuntarily, by decree of court because of violation of or noncompliance with certain provisions of law or because of insolvency.

These are only two, but important, advantages of employing the corporate form of organization to administer a dental health service plan.

CHARACTER OF CORPORATION

Consideration should be given to the question whether the dental health service corporation should be organized for or not for profit. In this discussion it is assumed, of course, that the law of the state would permit incorporation in either category.

The primary purpose of a dental health service plan, as I see it, is service to the public by a profession which is pledged to such service. It is or should be a plan under which the dental health of voluntary subscribers is improved and protected at a cost within their ability to pay. Admittedly, practitioners who cooperate in the implementation of such a plan are entitled to reasonable fees for professional services rendered, but the motive behind the creation and administration of

any such plan, and, therefore, the justification for the organization of the corporation, is service to the public and the profession, and not the personal profit of the creators or administrators. Service, of one kind or another, in the public interest is the purpose of the not-for-profit corporation. Hospitals, schools and charitable foundations of every kind are typical of the not-for-profit corporate organization. Granted, that when a hospital bill or a college tuition statement is received, the not-for-profit character of the organization seems more fiction than fact, the truth is that if there be profit it belongs not to the "owners" but to the corporation, to be employed for the improvement or expansion of the service it performs. Therefore, I believe that it may reasonably be concluded that of the two classes or types of corporations, the not-for-profit organization is in closer consonance with the purpose of a health service plan.

Moreover, there are possibly more pragmatic reasons for recommending the adoption of the not-for-profit form. In the first place, the law generally looks with greater favor and leniency on such a corporation. Property, real and personal, owned and used by such a corporation in the execution of its purpose may be exempt from local and state property taxes. Since the not-for-profit corporation does not issue capital stock to owner-investors, it will not be subject to a capital stock tax. Although the not-for-profit characteristic of its organization will not *per se* exempt the corporation from the application of the Internal Revenue Code, the income tax problem should be of little significance because of the absence of any substantial corporate profit.

With the assumption, then, that under the laws of the state, authorization to form a not-for-profit corporation to act as an intermediary or service agent in the operation of a dental health service plan is granted, consideration is given to the organization of such corporation.

ARTICLES OF INCORPORATION

Prescinding, for the purpose of the present discussion, from the several theories as to the true origin and nature of the corporate entity, it is apparent that the corporation's charter, issued by the state, is its birth certificate, its lease on life. It is this charter which constitutes the official recognition by the law of the existence of the particular corporation as a legal entity separate from its incorporators, shareholders, or members.

In addition, the term "charter" is frequently employed to describe or include the articles of incorporation. The articles, for the purposes of this discussion, may be considered as a contract between the state, the incorporators and the corporation. The preparation, execution and the filing in the appropriate state or other governmental office of the articles of incorporation is the initial step in the formation of a not-for-profit corporation.

In the organization of a business or a for-profit corporation, share subscription agreements between and among the initial shareholders or investors are common and usual, but they need not concern us in a not-for-profit organization. However, even in the case of the not-for-profit corporation, there should be a preincorporation agreement or understanding among all interested parties as to the purpose for which the corporation is to be established. In the case of a proposed dental health service corporation it is my opinion that the membership of the dental profession should be fully consulted and briefed not only as to the basic plan but also as to the major problems of administration. In other words, before articles of incorporation are filed the plan should be formulated in considerable detail. I assume that the perspective in initiating such a service plan is profession-wide, at least locally, and that the creation of competitive plans within a limited area might possibly impair the high quality

of dental service and lead to cut-rate practice to the disadvantage of the patient and of the profession. On this assumption, it would appear that local dental associations will have to undertake the initial spadework in securing the cooperation of the practitioners and in the formulation of the plan. Only after the skeleton of the plan has been constructed, will the dental society be in a position to complete intelligently articles of incorporation.

Generally, the form of articles for a not-for-profit corporation is comparatively simple. The corporate name or title must be selected first, and care must be taken that it is not deceptively similar to the name of an existing corporation. The period of duration or term of the life of the new corporation must be indicated. As mentioned previously, it is now customary to indicate that its existence is to be "perpetual" unless the local statute establishes a maximum term of years. If a term of years is specified, formal action will be required to renew the charter before the expiration of the term. No such action will be necessary, of course, if the duration is "perpetual."

Registration of Agent and Office Address • The great majority, if not all, incorporation statutes require that a registered agent and a registered office address within the state be specified in the articles. The purpose of such requirement is to guarantee that by examining the public record any person may determine the identity of the legal person and his or its address upon whom or to which formal notices or processes to the corporation may be served or addressed. There are a number of companies which, for a comparatively nominal service charge, will act as registered agent for a corporation. Of course, the identity of the registered agent and the location of the registered office may be changed by the corporation from time to time usually by a simple notice in writing to the proper governmental official, frequently the secretary of state.

Board of Directors • The articles generally must include a statement of the number and the names and addresses of the members of the first board of directors (sometimes referred to as trustees) of the corporation. This board will act as the governing body, as the management of the corporation for the first year or until their successors are chosen.

The various corporation acts seldom specify the number of directors a corporation must have except to provide that there may not be fewer than three. The determination of the number and of the personnel of this first board is one of the more important decisions that must be made before the articles are filed. How many directors should there be? This is a question to which there is no hard and fast answer. Group Health Association Inc., of the District of Columbia, is governed by a board of nine; the California Dental Association Service was organized with a board of 12 members; and the Oregon Dental Service Corporation's articles provide for five. Regardless of whether the number is to be large or small, foresight dictates the choice of an odd number so as to avoid a deadlocked vote on important issues before the board. On the assumption that the dental health service plan will operate on the open-panel basis and that all members of the profession within the area will be invited and urged to join, I would recommend a board of 11 members, although the number is certainly not a magic one. A board of that size, however, is not too large to be a working group and to meet regularly but large enough to permit membership representation of the local dental association, of the various specialties within the profession, of the general practitioners, and, perhaps, of the public.

General corporation acts do not prescribe necessary qualifications of directors except, perhaps, to require that each

member of the board be of legal age and, occasionally, that each be a resident of the state and a member of the corporation. It should be noted, however, that a number of the special health service corporation statutes which have been enacted in the various states require that one or more of the directors be licensed practitioners. Aside from any statutory requirement, however, it is obvious that the majority, if not all, of the membership of the board should be members of the dental profession. The corporation, in its charter and its bylaws, may establish special qualifications for its directors. It may be desired, for instance, that at least eight or nine of the board members be licensed dentists, members of the local dental association, and members of the corporation. It may be, too, that it will be found advisable to provide for representation on the board of some specialties within the profession.

In the case of a business corporation the members of the board are elected by the shareholders of the corporation; in the case of a not-for-profit corporation the board is elected by the members of the corporation or the board is self-perpetuating in that vacancies on the board are filled by the vote of the members of the board.

Assuming that either method may be utilized under the relevant statute, it is difficult to recommend one above the other; each has certain advantages. If the membership of the corporation is limited in number, it would appear to be more in keeping with the traditional concept of corporate management and control to have the membership elect, or re-elect, directors annually rather than to provide for a self-perpetuating board. Moreover, if the membership is required to contribute financially to the success of the operation, they may properly expect a voice in the selection of those who are to direct the corporate activity.

If, on the other hand, the membership of the corporation is large with resulting dilution of the interest of each member, there may be difficulty in engendering sufficient interest in the membership to secure a quorum at the required meetings. However, since most not-for-profit corporation acts permit the corporation in its bylaws to specify the percentage of the membership necessary to constitute a quorum, the problem, even with a large membership, is more fancied than real.

It has been assumed that all qualified dentists in the community will be urged to become members of the dental health service corporation and that the members will be asked for financial assistance, in the way of annual assessments or dues, to defray the administrative costs of the plan until the project becomes self-supporting or other sources of revenue are found. Under such circumstances, it would be recommended that directors be elected by vote of the membership.

Statement of Purpose • The last, and perhaps the most important, matter to be included in the articles of incorporation to which reference will be made is the statement of purpose. The purpose of a corporation is the reason for its existence, its end or goal, the business or activity in which it proposes to engage. The statement of purpose is important because it defines the limits of the particular corporation's legitimate activity.

Since a corporation by law is considered as having all powers reasonably related to the accomplishment of its stated purpose, common practice is to make the statement of purpose as simple but as general as possible within the broad field of proposed activity, and to include in such statement few if any express powers. The statement of the purpose of the proposed dental health service corporation might read something like the following:

> The purpose for which this corporation is organized is to contract with individuals and groups to assume or to defray the cost of dental service rendered such individuals and

groups, and to contract with licensed dentists for the performing of such dental service.

Although, as mentioned, it is not customary to include in the statement of purpose an extended list of powers, I believe that in view of the rather novel and experimental nature of such a service corporation it would be wise to include expressly certain powers which the corporation may wish ultimately to exercise, such as the power to furnish facilities such as clinics and laboratories for use by dentist licentiates, and to participate with other healing arts and with public health agencies in the establishment of diagnostic and treatment centers.

ORGANIZATIONAL MEETING

After the articles of incorporation are filed with the appropriate official and the charter or certificate of incorporation has been issued, the initial or organizational meeting of the membership must be held on such notice as may be required by the statute. The members of the corporation at that time will be those practitioners who, before actual incorporation, have agreed to participate in the plan. At this organizational meeting the first board of directors will be nominated and chosen if it was not required that the personnel of the first board be named in the articles. If they were named in the articles, the membership should adopt a resolution ratifying their selection for a term expiring at the first annual meeting of members or until such time as their successors should be chosen and should qualify. The next and probably the only other order of business properly to be considered at the organizational meeting of members is the matter of the adoption of bylaws.

BYLAWS

Bylaws are the rules and regulations for the internal government and administration of the corporation. Customarily the bylaws of a corporation are drafted and adopted by the directors. In the case of a corporation of this type, however, I am of the opinion that it would be better psychology to submit the proposed original bylaws to the membership for approval. Unless the local statute requires membership vote on amendments to the bylaws, however, the bylaws should provide that any amendments thereto may be made by the board of directors. Occasionally unforeseen or changing circumstances make an immediate amendment to the bylaws imperative, and such prompt yet considered action can be effected with certainty only by the board of directors.

In this rather brief discussion no attempt will be made to detail or to categorize the contents of corporate bylaws. They contain regulations relating to the qualifications for and admission to membership in the corporation, such as a provision that any dentist licentiate shall be eligible to membership, and a provision for annual dues or assessment of members to defray the administrative costs of the plan. The bylaws describe the officers of the corporation, their terms of office, the manner of their selection (universally by the board of directors), and the powers of each office. The bylaws of a not-for-profit corporation should also include, if the matter is not included in the articles of incorporation, a provision for the distribution or allocation of net assets of the corporation in event of dissolution.

EXPENSES

The fiscal problems of a dental health service plan will not be discussed here in detail. The costs of formal incorporation will be comparatively nominal unless it is determined that special legislation is required to authorize such incorporation. The preincorporation costs of educating the dental profession as to the advantages of a voluntary dental health service plan, and the expense of the research and expert counseling required to formulate the

details of the plan, may prove to be substantial. Funds to defray such expense will have to come from organized dentistry, unless public agencies or private welfare groups can be convinced of the public-service nature of the proposed plan. In view of the apparent success of the plans now in operation, it may not be too difficult to secure contributions to defray such costs. After the service corporation is formed and the plan put in operation, the expense of administration must be budgeted and included in the charge to the individuals and groups subscribing for dental service.

CONCLUSION

There is no insurmountable legal obstacle to the formation of a dental health service corporation. The not-for-profit corporation is the logical agency or instrumentality through which such a plan may best be implemented.

THE CLOSED PANEL CLINIC IN A HEALTH SERVICE

Herbert K. Abrams, M.D., Chicago

It is fitting to open this discussion with remarks by Harry Lyons,[1] who in a recent address said:

> This is an age that calls for many things: study, foresight, courage and active participation in communal affairs. We dentists must break the shackles of our office isolation and lend the weight of our intellect and courage toward the solution of the prevailing social, political and economic problems in which our profession has important stakes. We should do this not only for ourselves, but more importantly for the society of which we are but a part.

The report by the President's Commission on the Health Needs of the Nation in 1952[2] summarized the dental care situation in these words, "Sufficient dental care either is not available or is not utilized by the American people to a degree even approaching an adequate level." Bearing this in mind, the public generally and the dental profession particularly must encourage experimentation whose purpose is to bring high quality dental care to more people. Such experimentation is now under way throughout the country.

A cursory look reveals many types of prepaid dental care programs in operation or development. One of these is the group practice, prepayment plan. (I prefer the more positive term "group practice" to the rather negative expression "closed panel." Technically, a closed panel need not be a group practice. For all practical purposes, however, the closed panel plans about which dentists speak are organized in the form of group practice.)

Group practice, prepayment dental plans today may be classified in the following categories: (1) the industrial plan in which dental care is provided directly by an industrial company; (2) the union-sponsored health center in which dental care is a part of a general health center program; (3) union-sponsored program

Medical director, Union Health Service, Inc.

1. Lyons, Harry. Dentistry peers through a window. Fort. Rev. Chicago D. Soc. 31:7 May 1, 1956.

2. President's Commission on the Health Needs of the Nation. Building America's health; findings and recommendations, vol. 1. Washington, D. C., U. S. Government Printing Office, 1952.

in which dental care is provided by a group of dentists who are not a part of a general health center and (4) the cooperative type plan in which dental care is provided as a part of a cooperative prepayment medical care program.

An attempt will not be made to describe any of the industrial type programs because they represent an older pattern with which most dentists are familiar. Examples of the other plans will be described, however, because they represent a consumer-sponsored type of program which is slowly growing in the United States in the fields of medical and dental care.

LABOR HEALTH INSTITUTE

The Labor Health Institute of St. Louis was started in 1945. It serves approximately 14,000 members and family dependents of members of Local 688 of the International Brotherhood of Teamsters. Comprehensive medical and dental care are offered on a prepayment basis. The program is financed by employer contributions of 5 per cent of gross payroll into a health and welfare fund which is governed by a board of directors representing the union, the employers and the public. Forty part-time physicians and 12 part-time dentists staff the modern, well-equipped health center.

The scope of services is complete dental care except for orthodontics. All of this is prepaid except for dentures which are made in an outside laboratory and furnished through the clinic to the patient at low cost.

The time devoted by the 12 part-time dentists is equivalent to that of five full-time dentists. All are graduates of recognized dental schools and hold membership in the local, state and national dental organizations. They all have had general training but several have developed specialty skills. Dentists are selected by the medical director of the Labor Health Institute in consultation with the director of dental service and the medical advisory committee which includes a dentist.

The dentists are paid on the basis of a starting salary of $5 per hour advancing to $6 in four years. This compensation is equivalent to an annual range of $10,400 to $12,500 per year for full-time work. The chief of the dental service receives $1 per hour more because of his extra responsibilities. It is reported that this compensation compares favorably with dentists' incomes generally in that part of the country. The dentists also receive paid vacations and other employment benefits.

Dental staff conferences are held every one or two weeks, and the dentists are compensated for this time. Periodically, the dentists meet with the general medical staff.

There are six dental assistants and one registered nurse. Each dentist has a full-time assistant when operating at the chair. The Labor Health Institute would like to employ dental hygienists, but has been unable to obtain them.

The annual income of the Labor Health Institute is $1,000,000. The amount spent on dentistry is $130,000. This means about $9 per year per eligible person. The cost per dental visit comes to $5.75.

The Labor Health Institute is an example of a union-sponsored program in which dentists and physicians practice together in one health center. This arrangement is unique in that physicians and dentists have opportunities to consult freely with each other.

Patients who come for dental care are offered also a complete physical examination. Conversely, medical patients found to have dental problems can be seen by the dentist. In a plan of this type the two professional groups work as equal partners in a common health program.

Evaluation of the services given is described by Dunning[3] in his study of the program in 1954. His opinion is epitomized in these words:

If praise be given here and criticism there for detailed activities in the dental program, all this is secondary to the main fact that a sincere group of individuals is working to reasonable capacity to give people what they want: good treatment for existing dental disease. Education, whether for health or any other objective, is wasted unless there is some degree of fulfillment for the desires created. Fulfillment is here.

ILWU-PMA PLAN

On the West Coast, the International Longshoremen's and Warehousemen's Union and Pacific Maritime Association are pioneering a significant dental program now less than two years old. The salient features of this program are: (1) beneficiaries are limited to longshoremen's children up to their fifteenth birthday; (2) beneficiaries in the Los Angeles and Bay areas of California are given a choice of service through either a closed panel group or an open panel; (3) the program is financed out of surplus funds accumulated in the ILWU-PMA Welfare Fund which also provides comprehensive medical care.

This experience is unique for a number of reasons: (1) it gives an opportunity to compare the experience of closed and open panel programs and (2) it is concentrating on children—an unusual opportunity for preventive dentistry.

Since the entire program is so new, no comparative data on open and closed panels can be given. The characteristics of the closed panel group in Wilmington, Calif., the port area for Los Angeles, can be described briefly. In the first 15 months, this program served some 1,850 children. All dental services are provided except orthodontic and cosmetic dentistry. The program is based on an agreement between the ILWU-PMA Welfare Plan and a local dentist. This dentist in turn employs six other dentists, three of whom are full-time and three part-time. They work under one roof in good facilities, where they see private patients, as well as the prepaid group. In addition there is one dental hygienist, and one and a half assistants per dentist, a laboratory technician and laboratory and office staff.

Although all the dentists work for the chief dentist, there are provisions for attaining partnership and information has been received that one dentist is now in the process of becoming a partner. All dentists draw a salary which varies from $900 to $1,000 per month for full time and from $50 to $85 per day for part time. The full-time dentists receive other benefits such as sick time, vacations with pay, study courses and convention time. The work week is five days of seven and a half hours per day.

Payment is made by the Welfare Plan to the dental group on the basis of a fee schedule. Monetary advances are made by the Plan on the basis of a capitation fee depending on the number of children enrolled. At present the dentists are being paid $4.50 per child per month.

The dental director writes that "actually we have seen well over 95% of those eligible so that the cost per patient is roughly the same as the cost per eligible person."[4] This utilization rate is significantly higher than the rate in the parallel open panel. Presumably when accumulated experience warrants, a flat prepayment fee will be agreed upon between the Welfare Fund and the dentists.

Several other features of this plan are worth mentioning:

1. The agreement between the ILWU-PMA Welfare Plan and the dentists requires the establishment of a Dental Advisory Board, the composition to include the following: a member of the State Board of Dental Examiners; member of the faculty of the University of Southern California School of Dentistry, department of pedodontia; representative

3. Dunning, James M. Dental service at the Saint Louis Labor Health Institute. St. Louis, St. Louis Labor Health Institute, 1955, p. 5.

4. Schoen, Max. Personal correspondence, May 1956.

of the Public Health Service and a member of the committee on dental services of the Southern California Dental Association.[5]

This Board shall do the following:

. . . make whatever checks as to the quality of care performed by [the dentists] as shall appear sufficient to the Board to satisfy the Trustees that patients are receiving care commensurate with the fees paid for said care.[5]

Last July this Board inspected the program and in their subsequent report stated that the care given was of good quality.

2. The agreement between the Plan and the dentists also sets up a grievance procedure whereby it is possible in an orderly way "to resolve any and all grievances or disputes arising between children . . . or their parents" and the dentists. Any dispute regarding quality or necessity of care must be submitted to the dental advisory board.[5]

3. The director of this group in commenting on the high percentage of participation (utilization) in his plan, wrote the following:

. . . we operate under a plan with good controls. We take it upon ourselves to work hard to get all of the people in, through letters, phone calls, etc. This as you know would be very difficult to do in an open panel. We have helped to impart a feeling to our patients that they are part of a group program which . . . gives some extra spirit to it. . . .[5]

4. Another unique feature of this program is its interracial policy. Out of four full-time dentists, two are Anglo-white, one is Japanese and one is Negro. The rest of the staff is similarly mixed in race and color. The dental director wrote "This has led to exceptionally fine patient relationships in a mixed group."[4]

GROUP HEALTH ASSOCIATION

The Group Health Association of Washington, D. C., is a medical cooperative providing comprehensive prepaid medical services to about 20,000 persons. Most of these people are government employees and their dependents. Such a plan differs basically from a union welfare fund plan in that the members enroll as individuals and family units and pay the prepayment out of their own pockets directly, whereas in a union plan the entire group is enrolled and the Fund pays the premiums.

Thus, the cooperative plan must guard against adverse selection of risk. Its costs tend to be higher because it has extra expenses for promotion of the plan and collection of premiums. For these reasons probably the Group Health Association approached very cautiously the matter of offering dental coverage.

After four years of study, a dental program was established in 1949. It offered care on a fee-for-service basis because:

. . . (1) the principle of prepaid insurance was regarded as inapplicable to the treatment of accumulated needs, and (2) . . . there was little information on which to base estimates of service requirements and program costs.[6]

The dental service was designed to provide complete and continuing dental health care for a limited number of persons electing such service. Fees were based on the cost of rendering the various services to allow the program to be self-supporting, and the Group Health Association assumed the responsibility of underwriting all financial obligations of the program. "This method . . . was used to assure the provision of sufficient actuarial data and administrative experience on which to base the ultimate prepaid dental service."[6]

The patients who chose the dental service were required to agree that they would accept all of the treatment indicated in the diagnosis and treatment planning and all of the maintenance treatment indicated at recall. The statistics were divided into two groups:

5. Agreement for dental services in Wilmington Harbor Area between ILWU-PMA Welfare Plan and Max Schoen.

6. American Dental Association, Council on Dental Health. Group dental health care programs. Chicago, American Dental Association, 1955, p. 15.

initial treatment and maintenance treatment.

The staff consisted of three full-time and eight part-time dentists; the time devoted by these dentists was equivalent to that of seven full-time dentists. There are regular staff conferences at which diagnosis and treatment plans are discussed.

The program operated its own prosthetic laboratory under the philosophy that close professional supervision provides a better prosthetic service to the patient and a more efficient operation to the dental service itself that can be reflected in reduced fees to the patient.[7]

In 1954, after the program had been in operation for five years, the Group Health Association decided that sufficient experience had been gathered to justify undertaking the research envisioned in the original plans. They accordingly invited the Division of Dental Resources of the U. S. Public Health Service to collaborate in a study of this experience.

The result is the publication of *Comprehensive Dental Care in a Group Practice*.[8] It is a useful contribution. The study's purposes were to answer such questions as what services are required, how much chair time is consumed and how many clinic visits are required for both initial care and maintenance care.

Briefly the study found that the average annual amount of chair time consumed per person was 5.3 hours for initial mouth rehabilitation and 2.8 hours for annual maintenance care. Applying Group Health Association fee schedules, Labor Health Institute cost data, and the Los Angeles Culinary Workers' dental program rate of payment to dentists, the staff of the American Public Health Association subcommittee on medical care estimates costs ranging from $75 to $100 for initial care per patient and $40 to $50 for annual maintenance care.

One of the objectives of the study was to broaden understanding of the characteristics of regular maintenance care. The study found that once a maintenance regimen has been established, chair time remains almost constant for succeeding recall series. Thus, it is concluded that maintenance care is predictable and hence insurable.

Finally in April of this year, the Group Health Association announced a prepaid dental care plan for maintenance care. Enrollment is voluntary, but at least 1,000 persons are required to make the program feasible. The member must have all initial dental work done at his own expense. This is provided by the group on a fee basis as before. All maintenance care is prepaid except for orthodontic treatment and major surgery (such as reduction of a broken jaw).

The charges are $3 per month or $36 per year per eligible individual plus the fees for the initial care necessary to qualify.

COMMENT

The potential advantages of group practice to the dentist are readily apparent: ease of referral; consultations and conferences between the dentists working together (and between dentists and physicians where there is a combined medical-dental service); sharing of equipment; utilization of auxiliary personnel to relieve the dentist of all but professional work, and the practical benefits of being able to have vacations and time off for study without worrying about their effect on the practice.

Similarly, the potential advantages to the patient are the following: better quality of care by virtue of the availability of a group of dentists in different specialties working together; the economies possible by group sharing of overhead,

7. American Dental Association, Council on Dental Health. Group dental health care programs. Chicago, American Dental Association, 1955, p. 16.

8. U. S. Public Health Service Publication 395. Comprehensive dental care in a group practice. Washington, D. C., U. S. Government Printing Office, 1954.

and the possibilities of democratic handling of grievances in the setting of a consumer-sponsored plan.

The qualifying word "potential" deliberately has been inserted before the word "advantage" because the attainment of these potentials requires not only good intentions, but also the conditions necessary for realizing them.

Group practice can deteriorate into a group of individual practitioners whose only relationship is the economic one of sharing equipment and overhead. The methods of payment of dentists can stimulate haste and poor work. Excessive size of a health center, plus overdepartmentalization, can impair good doctor-patient relationships. Most important of all are the attitudes of the doctors to the patients. And good attitudes as well as competence can be assured by careful selection and provision of conditions of work conducive to good practice.

All these are legitimate concerns of the dental profession and of the patient group.

The question of "free choice of dentist" is a bone of contention in dentistry, it is assumed, just as "free choice of physician" is in medicine. Frequently it has seemed that the doctor has worried about it disproportionately more than has the patient who is supposed to worry about it.

A tremendous number of people, especially those in the low income brackets, have no "family physician" and this is probably even truer of the "family dentist." Most people go to the physician or dentist when something specific bothers them. They tend to receive episodic care, without real continuity. They tend to come too late for preventive medicine or preventive dentistry. They are not equipped technically to know whether the quality of care is good. (They are often equipped, however, to know whether the doctor likes people and hence treats them in an understanding and personal manner.)

How is this problem handled? The group practice advocates say that the group must be carefully selected for competence and personality. It must be large enough to provide choice from among several doctors and from among the major specialties. Thus is combined the advantages of group practice and free choice.

Another, perhaps more real, fear of dentists and physicians is that of lay interference. Doctors, traditionally "rugged individualists," now are confronted with a nation-wide movement of consumers—people—in an organized way trying to obtain for themselves and families the benefits of modern science. Through their unions and cooperatives they have pooled their financial resources and are bargaining for and purchasing various kinds of medical and dental benefits. A small but surely growing trend is toward the group practice health center controlled on a policy level in whole or in part by the consumers of the service.

How can professional men meet this trend? One answer is embodied in the following paragraph from the bylaws of the Group Health Association:[9]

> Practice of medicine by physicians; practice of dentistry by dentists. The Board of Trustees shall in no way regulate or supervise the practice of medicine or the practice of dentistry by any physician or dentist with whom it contracts for the care of members, nor shall it in any way supervise, regulate, or interfere with the usual professional relationship between such physician or dentist and his patient-member, and every such contract entered into by and between a physician or dentist and the Association shall contain a positive covenant to that effect.

Every union or cooperative direct service health plan that I know about has a similiar provision in its contractual arrangement with its doctors. The implementation of these clauses is the responsi-

9. U. S. Public Health Service Publication 395. Comprehensive dental care in a group practice. Washington, D. C., U. S. Government Printing Office, 1954, p. 3.

bility of the doctors and lay boards themselves.

Compensation of doctors in these plans generally appears to be adequate. Here, again, the doctors themselves as a group have opportunity for collective bargaining with consumer groups.

DISCUSSION

If the distribution of medical care suffers from the inability of large segments of the people to pay for it, and from faulty organization and distribution of the resources of medicine, this may be even more strongly said about dental care.

Prepayment and new patterns of organization of dental care, as with medical care, are in a very early stage of development. There is no doubt that restorative as well as maintenance dental care must be prepaid, if dentists are to solve the problem of bringing good dental care to all the people.

Like medicine, dentistry has become highly specialized. Group practice of dentistry will grow as its greater efficiency becomes more widely recognized. Moreover, the inexorable need for greater economy and high quality of care will encourage the integration of dentistry, medicine and the other health disciplines as parts of one field of health care. The obvious advantages to the professions and to the patients of dentists and physicians working together under one roof will result in the growth of integrated groups.

The attention which the American Dental Association has given this problem augurs well for the future. The Association has wisely adopted a constructive policy of offering help not only to its constituent state and local societies, but also to union and other lay groups wishing to obtain prepaid dental care. The Association's booklet, *Group Dental Health Care Programs*[6] and its set of principles for determining the acceptability of dental prepayment plans[10] serve as excellent guides.

Recently, James Dunning[11] presented to the American Association of Industrial Dentists an "appraisal procedure for closed panel group dental programs" which would appear to be a sound basis for moving forward.

The statement in the American Dental Association's publication *Group Dental Health Care Programs*[12] may well serve as a guide to all in dentistry and medicine:

> **The most apparent need in the field of dental health education is an understanding by the public, both as individuals and groups, that the only sound and lasting dental health care programs are those which provide efficient, high standard dental health care to the patient. Such programs must also result in an adequate sense of personal fulfillment and material return to the providers of the service.**

10. American Dental Association, Council on Dental Health. Principles for determining the acceptability of dental prepayment plans (revised, 1955). Mimeographed. Chicago, American Dental Association, 1955.

11. Dunning, James M. Appraisal procedure for closed-panel group dental programs. Presented at meeting of American Association of Industrial Dentists, Philadelphia, April 1956.

12. American Dental Association, Council on Dental Health. Group dental health care programs. Chicago, American Dental Association, 1955, p. 33.

The Human Body • The human body is the magazine of inventions, the patent office, where are the models from which every hint is taken. All the tools and engines on earth are only extensions of its limbs and senses. ***Ralph Waldo Emerson.***

A technic and occlusal form designed to produce stability in dentures

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The outstanding problem in prosthodontics today is occlusion. Occlusal problems are directly responsible for much of the dissatisfaction with complete dentures. Patients wearing complete dentures complain of soreness and tipping, especially with a lower denture. The dental profession is still seeking to solve complex problems in order to achieve stability under biting stress (nontipping), balance, comfort, and efficiency. These are problems in occlusion, for such problems are directly related to the teeth, their occlusal form, their arrangement on the ridges, their relation to each other and to the other components of the masticatory organ. The more complex the occlusal form, the greater is the chance for error in occlusion.

To obtain adequate results with the anatomic teeth commonly used today, it is essential that complicated and elaborate technics and equipment be used. Boswell,[1] in discussing modern prosthetic technics, says: " a point is reached in all technical procedures . . . where the quest for further efficiency results in an elaboration and complication out of all proportion to the gain secured." Modern technics seem to be designed for the specialist. All dentures are not made by specialists. There has long been a need for a simple, less mystifying procedure—a method that can be used on every patient, with confidence that the finished dentures will maintain health and restore function—a way that will not create occlusal problems.

Clinical examination of denture-wearing patients too often reveals discrepancies in the distribution and direction of forces. Something seems to be lacking in the plan to have all of the components working in harmony as a unit. There is seldom protrusive or lateral balance, and usually a shifting of the base over the soft tissue when closing in centric position is evident. Stability under unilateral biting stress is rarely found.

Observation of the discrepancies and the attendant malocclusion and trauma seen in many patients prompted a search for a way to orient teeth in the mouth in harmonious relation with all other factors. Considering the problem from the standpoint of biology and physics, the adjustable occlusal plane recorder was developed as the simplest way to orient the occlusal plane so that it would be in harmony with the temporomandibular joint.

To produce freedom of movement, stability, balance and efficiency, which in turn preserve the health and comfort of the supporting tissues, the center-crest tooth with crossing knives proved to be a logical solution. These teeth can cope

1. Boswell, J. V. Practical occlusion in relation to complete dentures. J.Pros.Den. 1:307 May 1951.

with the slight change caused by the settling of the dentures; anatomic cusp teeth cannot.

In order to preserve the precise occlusal plane, and all other relationships that are sealed in the mouth in bite registration, and to carry them through the laboratory without change, the occlusal guide plate was developed. It provides a definite plane to which the teeth are "set up." In turn, the finished dentures can be placed in the mouth without posterior occlusal correction. These three developments will be discussed later.

ANALYSIS OF OCCLUSAL PROBLEMS

Anatomic teeth present a complex arrangement of projections which are supposed to mate and interdigitate with precision. Every denture settles to some degree, which results in reduced vertical dimension. The immediate result is malocclusion. The amount of change varies in different mouths according to the resiliency of the tissue. In this slight change in vertical dimension, the condyles can remain in centric position in their fossae, but the dentures cannot maintain their original centric occlusal interdigitation without trauma. In any amount of closures, a denture seated on the mandible cannot escape a change forward in relationship relative to the denture seated on the maxilla. The cusps, as they are brought together and approach occlusion, will force themselves into interdigitation by riding on the mesiodistal slopes of the opposing cusps and cause the dentures to skid on the supporting tissue. A slight change is difficult to see or to detect. Cusp teeth demand that interdigitation be precise and unchanging. Slight movement resulting from this altered occlusion produces interference which causes trauma, increased ridge resorption and loss of retention.

Interference will prevent the normal muscles from carrying the mandible and condyles to centric position. Stresses appear, for the muscles are obligated to take the mandible and condyles to centric position at the end of chewing and swallowing cycles. This creates a disharmony in the relation of all of the components of the masticatory organ. If there is any interference in occlusion, something will suffer.

Anatomic cusp teeth tend to aggravate these changes in relationship. Loss of vertical dimension causes the pressure to be transferred toward the anterior progressively, in relation to the amount of closure. In the ensuing irritation, more and greater changes and destruction appear. It is a vicious cycle. The more the bumping and riding of cusps, the more loss of tissue and bone. The greater the loss of these supporting tissues, the poorer the interdigitation, and the greater the movement.

There is a close relation between the soreness caused by movement of the bases and the patient's ability to chew. The movement of dentures is the result of cusps, whether purposeful as in "playing" with the teeth, or unintentional as a result of change in relation due to settling. Most soreness and damage is produced when there is no food in the mouth, but the slight movement which causes soreness, rotates or shifts the base and causes loss of retention. The presence of soreness will not invite any heavy biting force to be applied.

Stability is necessary for a power stroke on resilient food. Without stability the balancing side leaves the ridge, often with a resulting "click" or snap, causing embarrassment and soreness. What is more important than comfortably seating the dentures in all positions, under all conditions?

Thompson[2] has listed the components of the masticatory organ:

1. Temporomandibular joint
2. Musculature

2. Thompson, J. R. Concepts regarding function of the stomatognathic system. J.A.D.A. 48:626 June 1954.

3. Soft tissue and bone
4. Teeth
5. Blood and nerve supply, tongue, and so on

These components must function harmoniously. From the prosthodontic standpoint, all but the teeth are "fixed" factors. The other four are natural parts of the body, and if left unhampered will function freely and in harmony as a unit. (It must be emphasized that the occlusal surfaces and the occlusal plane of denture teeth can provide either freedom or trauma to the other components of the system.)

In edentulous mouths, an artificial component (dentures) must be inserted to complete the system. This means that the relationship of the occlusal surfaces of the teeth must be established so the teeth are in harmony with the influence of the temporomandibular joints, as the muscles direct the mandible in its varied movements. Further, these movements must be free, thus permitting the mandible to carry the denture base and teeth in all possible occlusal contacts with the opposing teeth and base, with no traumatic impingement on any part, especially the occlusal surfaces, for they will transfer the trauma to the supporting tissue. Whatever is placed on the chewing surface—bumps or gliding surface—will transfer a like effect to the supporting tissue. It takes very little horizontal force anteroposteriorly at the point of a cusp to slide a lower denture over the soft tissue. Inasmuch as an artificial substitute is being introduced which cannot be fixed rigidly to the supporting tissue, isn't it more logical to substitute artificial teeth that will work in harmony with the other factors which are already working freely when left unhampered?

The preservation of the health and comfort of the supporting tissues depends, to a large extent, on the employment of posterior teeth without mesiodistally inclined planes; teeth that can cope with slight changes in relationships. More comfort and freedom of movement, more retention, stability, and patient satisfaction will be experienced with posterior teeth without cusps.

Vertical dimension of occlusion, interocclusal space, centric position, rest position, all eccentric static and dynamic relations of occlusion, are controlled by the several muscles of mastication. Since the muscles control these relations, their anatomy and physiology must be understood. The dentist must train himself to see the relations and to know when they are right. In one instance the dentist can feel the muscle in function (when the mandible is in centric position) and thereby be assured that this important relation is recorded correctly.

Some dentists think that they must use cusps to guide the mandible back to centric position, or to lock the mandible in this position. It is inconceivable that the power of the muscles, which pull and guide the mandible, can be overcome by cusps attached to a movable base seated on soft tissue.

STABILITY

Stability of complete upper and lower dentures under unilateral biting stress can be attained. This does not mean that a fixed or rigid relationship is obtained, for that is impossible with dentures seated on soft tissue overlying bone. A denture is stable when the forces applied to food under biting stress do not substantially alter the relation of the dentures to the underlying tissue. In other words, there is no wobbling or tipping off the ridges. It must be realized that it is necessary to control forces before dentures reach occlusal contact, as well as to control them in all possible occluding positions. Stability should not be confused with retention. A denture may possess retention and yet not be stable.

Modification of function necessitates a modification of form. The occlusal surfaces of a properly designed nonanatomic

tooth can help to keep the denture seated in place.

Atmospheric pressure and surface tension alone are inadequate to keep a denture from tipping. The only factor which can be depended on to seat the denture, prevent tipping, and provide stability under unilateral biting stress is the form of the occlusal surface of the posterior teeth and their position on the ridge, provided they are in harmony with the temporomandibular joint and the muscles.

CENTER-CREST MATING TOOTH BLOCKS

Buccolingual Aspect • By placing the crest of the tooth in the center and having the occlusal working faces slope slightly at an angle downward and outward, the relation of the working face to the center of mass is changed, and in turn the direction of force is changed. To direct the center of force toward the dynamic center of the mass will give automatic balance and stability. This form follows simple laws of physics.

In order to have an occlusal form that would direct forces vertically and somewhat lingually, one that would automatically seat and stabilize the denture under biting stress, the center crest tooth with sloping occlusal face form was chosen (Fig. 1, above).

It is important that the upper and lower posterior teeth be mating parts so as to function as a unit. The lower tooth block is formed so that it meshes precisely with the upper tooth block. Each working face is at an angle to allow for rise in protrusion and balance in all lateral and eccentric movements (Fig. 1, below).

Anteroposterior Occlusal Aspect • The tooth blocks are made of acrylic resin with metal inserts. The lower first bicuspid has no metal insert, to avoid showing metal in speech. The occlusal pattern is in a chevron design, the knives of the lower opening toward the posterior, while on the upper the opposite is provided (Fig. 2). The resultant crossing knives provide cutting or shearing action. The center crest of the lower fits against a duplicate mating surface of the upper tooth block which is a little wider than the lower. This provides for mashing and trituration and milling near the end of the chewing stroke and when the teeth are in centric relation.

The working faces are milled precisely to provide straight and precise planes so that all knives and center crests of the lower teeth and knives and center occlusal surfaces of the upper touch when in centric relation. The angle of the slope which provides the center crest height is so measured that there is free balanced contact in all eccentric and centric movements. The working occlusal surfaces have no prominences that might hinder gliding movements. Beyron[3] states, "A form of occlusion permitting multidirectional gliding movements is the best." Head[4] reported that a lateral shearing action requires only 20 per cent of the force necessary to perform a purely vertical stroke during mastication.

In placement of the teeth on the ridge, the center crest of the lower block is about ⅛ inch lingual to the position taken by the buccal cusp of an anatomic tooth in the same spot—a better relation for forces under biting stress. Forces are directed lingually. Adequate escape ways are provided. There are no wells or traps to pack food, and the teeth are self-cleansing during mastication.

The occlusal surfaces are wear resistant. Provision is made for grinding the anteroposterior length of the units. They may be trimmed buccolingually where necessary. In instances of abnormal

3. Beyron, H. L. Characteristics of functionally optimal occlusion and principles of occlusal rehabilitation. J.A.D.A. 48:648 June 1954.

4. Head, Joseph. The human skull used as a gnathodynamometer to determine the value of trituration in mastication of food. D.Cosmos 48:1189 Dec. 1906.

relation of ridges, the center crest of the lower, and the center surface of the upper, are made diagonally off center. The teeth are carved so as to present a pleasing appearance of natural form.

BITE REGISTRATION

To establish the correct functional occlusal plane within the denture space, the biologic aspect must be considered, for the outcome depends on the free and harmonious action and relation of muscles, temporomandibular joint, supporting tissue and occlusal plane. When the occlusal plane is being established, a thorough knowledge of the anatomy and physiology of the masticatory organ is needed, for it is here that all the relationships of the component parts are recorded. The goal is to balance the forces, and thereby achieve harmony of relations.

In this technic, harmonious function of the skeletal and muscular components depends on the correct occlusal plane. Its establishment is of paramount im-

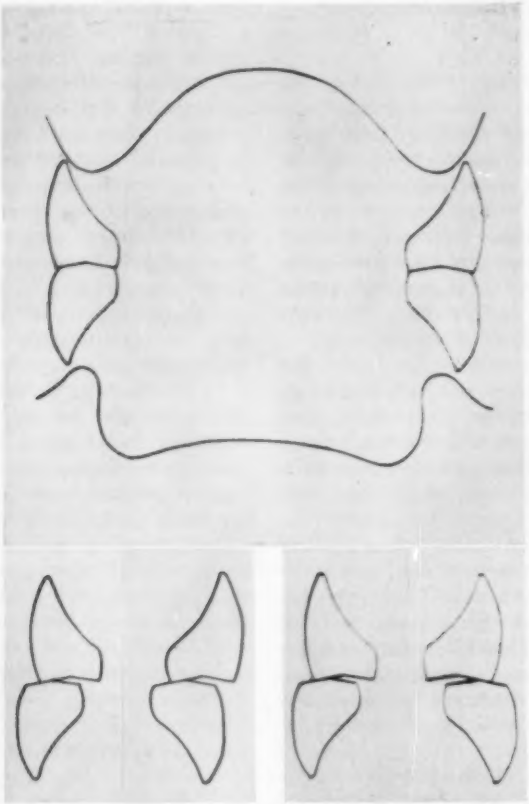


Fig. 1 • Above: Mating center-crest tooth blocks in centric relation. Below left: Mating center-crest tooth blocks in lateral movement, showing lateral balance. Below right: Mating center-crest tooth blocks in protrusive movement

portance. All of the information is recorded simultaneously and sealed in the mouth. The information thus secured is maintained carefully and is carried through the laboratory, and center-crested tooth blocks are set precisely to the plane established.

It must be understood that what the patient feels in contacts of the planes (equal pressure all the way round and no premature contact at any point on the steel rims) will be felt in the finished dentures on the occlusal surfaces of the teeth.

The development of the plane obviously will require some manipulation of the occlusal rims of the bite blocks (Fig. 3). To make the operation simple and accurate, stainless steel rims were machined with adjustable jacks attached at the posterior aspect on the right and left sides of the rim. Posteriorly the jacks are attached with wax to the well-fitting baseplate in such a manner that they may be elevated easily or lowered by turning a knurled fitting with the tip of the index finger. The anterior portion of the steel rim is mounted on a small pillar of wax adjusted to the desired height.

The starting point in recording the relation of the mandible to the maxilla and the plane is to establish the length of the upper anterior teeth. The upper steel rim is adjusted so that about 2 mm. shows beyond the relaxed lip. This is done for esthetic reasons.

The lower rim is adjusted to be level with the lower lip. This measurement is subject to change, depending on the interocclusal space and vertical dimension. Then the upper and lower rims are brought into apposition, level with the base of the retromolar triangle. This is done by turning the knurled fitting at the posterior aspect of the upper and lower rims. The adjustment is easy. All that is required is a light touch with the tip of the index finger. After the tentative vertical dimension is established, the interocclusal space is recorded.

Fig. 2 • Finished dentures. Crossing knives provide shearing action that gives these teeth their outstanding efficiency

RECORDING OF INTEROCCLUSAL SPACE

Interocclusal space is an important factor in insuring the harmonious function of all of the parts of the masticatory system. Its establishment involves the physiologic action of the muscles during speech. There is a chain of muscles encircling the head from the cranium to the hyoid muscles, attached to the thorax, which is arranged for the coordinated movement of the components of the masticatory system. The mandible and temporomandibular joints are stabilized by the controlling action of muscles. According to Sherrington's law of reciprocal innervation, control of a given muscle is carried out by its antagonist. The stimulation of one group of muscles in contraction causes the opposing muscles to relax proportionately.

The muscles of mastication, and other muscles and their antagonists, the inframandibular muscles, are brought into play during speech. The anterior teeth are brought into position and poised there to emit the "S" sounds. The rims must be

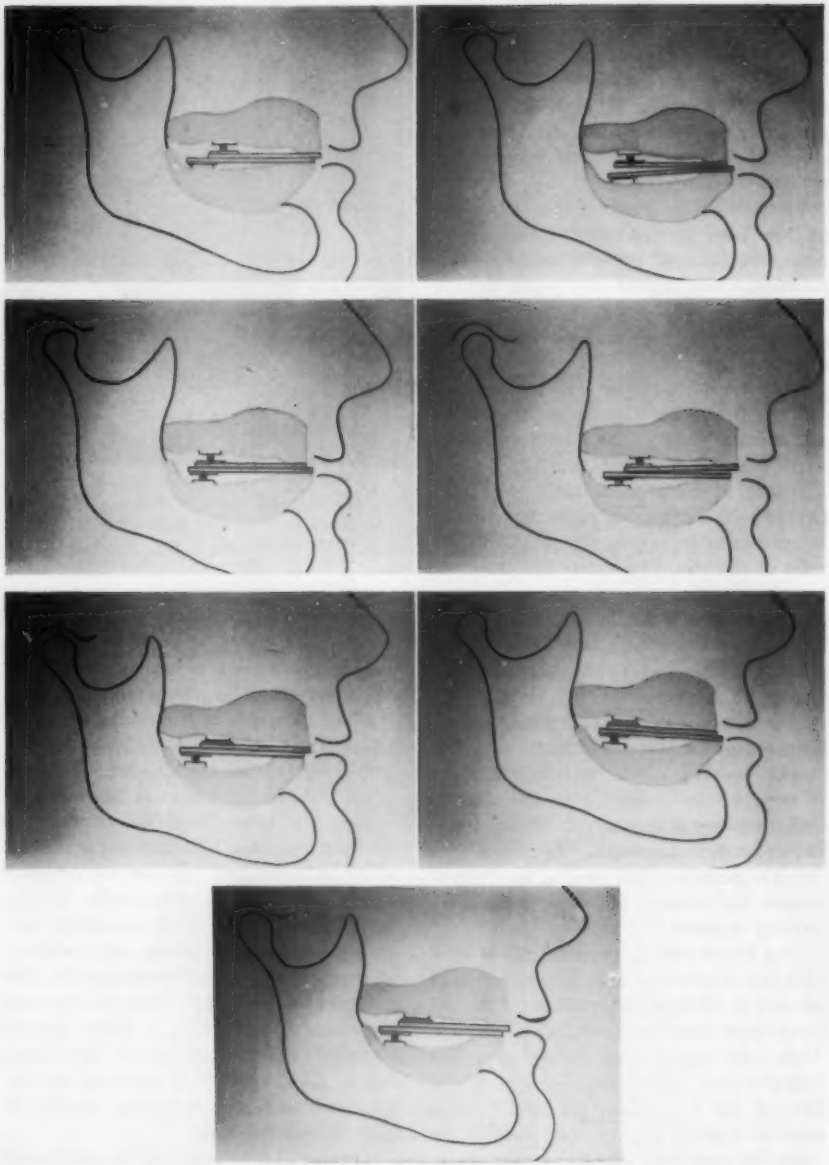


Fig. 3 • First row, left: Arbitrary plane before adjustment; right: protrusion on an arbitrary plane usually produces contact anteriorly with space posteriorly. Second row, left: In protrusion, lower posterior rim is adjusted to contact upper rim; right: previous adjustment (see first row, right) shifts contact to the posterior in centric position. Third row, left: Upper occlusal rim is now adjusted to equal contact; right: protrusive movement is now in harmony with temporomandibular joint. Bottom row: Centric position now showing occlusal plane oriented so as to be in harmony with temporomandibular joints and in apposition, with equal pressure

adjusted so that the space will not be less than 2 mm. from occlusal vertical dimension. The anterior of the lower rim is adjusted up or down to allow for proper clearance. This will insure that there will not be constant contact or clicking during speech. The anterior adjustment is simple. It is possible to add to the anterior length by the addition of wax to the pillar under the steel plane. To reduce the length, the pillar is heated with a hot spatula and pressed to the new position.

Interocclusal space or clearance must not be confused with freeway space. Interocclusal space is developed by phonetics and is a phonetic clearance. This clearance might be termed a reflex. It is the result of a movement of the mandible to a point between rest position and occlusion.

ADJUSTING AND ORIENTING THE OCCLUSAL PLANE

With this method the patient is instructed to close his jaws in centric position (Fig. 3, first row, left) and slide protrusively to the extent of the functional range and hold the position. Usually there will be a space posteriorly between the upper and lower rims (Fig. 3, first row, right). While the patient is holding this protrusive position, the lower jacks are adjusted up to bring the posterior portion of the lower rim into contact with the upper rim (Fig. 3, second row, left). Then the patient is instructed to return his mandible to centric position to bring the rims into light contact. The only point of contact will be posteriorly, on both sides (Fig. 3, second row, right). The upper jacks are adjusted up until there is contact of the rims all the way around (Fig. 3, third row, left). This is repeated until the rims are in near apposition while the patient moves his jaw from centric into protrusive position (Fig. 3, third row, right) and back to centric position (Fig. 3, bottom). Lateral movements are checked to determine the condylar influence in lateral excursion so that the teeth can be set to meet this influence. This simple procedure adjusts and orients the occlusal plane so that it is in harmony with the temporomandibular joints and muscles during function. It is necessary to have equal pressures posteriorly from the cuspid back, on both sides, with no area of premature contact in centric position. This is accomplished by watching and feeling as the patient slowly closes his mouth several times and touches the upper and lower rims in centric position. Adjustment of the jacks on the upper rim will correct any unequal pressure that may be present.

It is interesting to note that a plane so developed will approximately parallel the alveolar ridges.

It will be necessary to fill wax in between the posts and bases to make the upper and lower buccal aspects a smooth waxed surface from the periphery of the upper to the periphery of the lower when in contact, before the centric position is recorded.

RECORDING CENTRIC POSITION

Three checks are used when centric position is recorded.

1. The posterior fibers of the temporal muscle are felt.

2. A line is cut across the buccal surfaces of the upper and lower bite-blocks, to check closure from rest position.

3. An extraoral tracer is used.

Centric position is a mandibular position.

Centric occlusion is a tooth relation.

Robinson[5] states that "the temporalis muscle fans out so that the posterior fibers are parallel to the occlusal plane.

5. Robinson, M. Temporomandibular joint: theory of reflex controlled nonlever action of the mandible. J.A.D.A. 33:1260 Oct. 1946.

The posterior fibers act to pull the mandible backward."

The mandible is brought into centric position by muscles and not by the intercuspation of the teeth. The posterior fibers of the temporal muscles contract, and as a result the bulge can be felt as the mandible is pulled back into centric position when the fingers are held against the sides of the head slightly posterior to the superior attachment of the ears, median to the helix. Again the law of reciprocal innervation comes into play. The external pterygoid muscle acts as an antagonist and provides reciprocal action against the contraction of the posterior fibers of the temporalis muscle. This helps to produce the bulge felt in the temporalis muscle. At the same time the external pterygoid muscles prevent the condyles from being displaced distally. If the muscles are normal and healthy, the forces exerted between the posterior pull of the temporal muscles and the resistance of the external pterygoid muscles cause the condyles to assume their natural centric position, well centered in their fossae. Of course, other muscles, ligaments, and tissues play their part in the centric positioning of the condyles. Centric position is only present when there is a simultaneous bulge of the posterior fibers of the temporal muscles on both sides. This contraction cannot be held for a long period of time. Partial relaxation of both the temporal and external pterygoid muscles and other closing muscles gives a feeling of comfort or rest at occlusion, just anterior to centric position. Any contraction felt in front of the ears cannot be accepted as evidence of centric position.

Sicher[6] defines centric position as follows:

> Centric position is the physiologic, balanced position of the mandible in which not only the teeth are in normal relation but also the temporomandibular joints and the mandibular musculature are in harmony. It is, therefore, the "ideal" position of the mandible and should, in a normal dentition, coincide with the median occlusal position. . . . There is no doubt . . . the majority of individuals . . . can execute a retrusive movement of a magnitude varying slightly, about 1 mm.

Such retrusive movement can be made only when the posterior fibers of the temporal muscles are reinforced by the retractive action of the geniohyoid and digastric muscles. A strained, unnatural, extreme position results.

After checking centric relation by feeling the posterior fibers of the temporal muscle, and while the patient is holding his mandible in centric position, lines are drawn across the buccal surfaces of the wax bite-blocks from the upper to the lower. These same lines are used as a check in the hingelike movement of closure from rest position. Because of habits established with natural teeth, as of malocclusion, and because the closure is relaxed or unstrained until the posterior fibers of the temporal muscles contract to carry the condyles into centric position, patients will sometimes close slightly forward of the lines drawn. Further check with the extraoral tracer, and especially rechecking the "muscle bulge," will assure the operator of true centric position.

In instances of severance of the nerves, injury, or lack of muscle tone, when no contraction is felt in the muscles on one or both sides, the other two checks will provide a means of recording centric position. The bite-blocks are sealed in centric position in the mouth and are delivered to the laboratory.

LABORATORY PHASE

The laboratory phase, together with the technic in the mouth, determines the success or failure of finished dentures. This is not a criticism of the excellent work of laboratory technicians. Their procedures should be guided by the dentist's ideas

6. Sicher, H. Positions and movements of the mandible. J.A.D.A. 48:620 June 1954.

and by the information supplied in and with the bite registration.

The procedure is, first, to establish the correct relations in the mouth, then have the teeth set up in the laboratory so that these harmonious relations are returned to the mouth unchanged.

In the technic described herein, a mounting frame is used to mount the sealed bite-blocks on the articulator.

Maintaining the Established Occlusal Plane Through the Laboratory Phase • The laboratory must be furnished with the definite occlusal plane, to be followed exactly in the setup; that is, the plane on which the teeth will function in harmony with the temporomandibular joints and muscles and supporting tissue.

An occlusal guide plate is next introduced and attached to the universal joint of an adapter which is secured on the base of the articulator, midway between the two condyle guide posts. It is attached to a universal joint, and can be raised or lowered or tipped from side to side. There are movable extensions, or fingers, on the top of the plate that can be moved across the steel rim which represents the occlusal surface of the lower denture (Fig. 4). The plate is multiadjustable so that it can re-establish and hold the occlusal plane as found in the mouth. This will place the occlusal guide plate in the same relation between the ridges of the models as that established between the ridges by the occlusal plane recorder in the mouth. Centercrest teeth set to this plane will function in the mouth smoothly and efficiently with no occlusal correction.

The upper and lower rims are removed from the models and the ridges are exposed; then the teeth can be set in proper relation to the ridges.

Harmonious relations are recorded in the mouth, but precision must be built into the dentures in the laboratory. This can only be done by maintaining and following the plane and relations as recorded, and carefully setting the proper teeth in correct relation to the upper and lower ridges and equidistant from the center line. Many dentists have had the experience of sending carefully developed bite registrations to what he supposed to be a precision laboratory, only to find that the laboratory had its own ideas about the orientation of the occlusal plane and changed it, without consultation. In other instances, not having convenient room for posterior teeth, the laboratory technicians have opened the bite. If they are given a definite plane to set to, and understand the importance of the occlusal plane, laboratory technicians will not resort to such practices.

Fig. 4 • Occlusal guide plate. Transferral of occlusal plane as recorded in the mouth to occlusal guide plate on articulator

Closure of the bite can be effected unknowingly if an incisal guide pin is not used to hold the opening, and if it is not referred to constantly as a check in the setup.

Tooth Placement by Laboratory • The entire setup of teeth follows the functional occlusal plane (the focal point in integrating all relations) established in the mouth and transferred and maintained on the articulator, as in the following procedure:

1. With the ridges exposed to view, the anterior teeth are set to the occlusal plane correctly for esthetics and function.

2. Upper and lower tooth blocks are sealed together in their correct occlusal relation.

3. Posterior tooth blocks are arranged in correct relation to ridges and equally distant from the center line. It is important that the tooth blocks are arranged at an equal angle from the center line.

The tooth blocks are tipped at an angle buccolingually, the lingual angle lower than the buccal, to take care of the influence of the condyle in lateral movement and to insure balancing contact in these excursions.

The tooth blocks are secured in correct position against the occlusal guide plate to avoid movement in the warm and shrinking wax (Fig. 5).

After the finish waxing, the occlusal guide plate is replaced in position, and the teeth are again checked with a straight edge to see that all surfaces of the teeth that should touch, contact the surface of a common plane. Also they are checked to see that the upper and lower teeth and tooth blocks are in their proper relation to each other.

The dentures are then processed and finished.

When it is known that all relations were correctly recorded in the mouth, and that the laboratory has not changed these relations, it is not necessary for the dentist to "keep his fingers crossed" hoping that all is well on delivery of the dentures. He can know that everything is right. The dentist can give the patients what they rightfully expect—comfort, function, efficiency, stability, balance and esthetics.

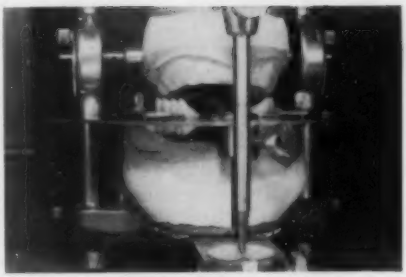


Fig. 5 • Upper and lower posterior tooth blocks are sealed together and secured in place on occlusal guide plate

NONMASTICATORY MOVEMENTS

Nonmasticatory movements are those made without food being present. These relations in occlusion include centric, protrusive, right and left lateral movements, or any combination of these. Such movements can be traumatic, so the occlusal surfaces of the teeth must be formed and positioned to balance and stabilize the pressures of denture bases on the underlying tissue with no torque or shift.

When the tooth and technic described herein are used, all the movements are free, gliding movements, with bilateral balance in every excursion. In any jaw movement the dentures remain seated on the ridges, and lateral movement of the base on the underlying tissue is hardly perceptible. The adjustment of the occlusal plane produces an anteroposterior balance, whereas the bilateral balance is the result of the shape of the tooth blocks and their positioning (level side to side, equal pressure, and other factors). In lateral movement the center crests rise at the same time as the tooth blocks glide in contact along their peculiar and distinct pathways of the working and balancing sides.

The adjustment of the occlusal plane will place the load or force on the posterior teeth. The load must be kept as near the center, anteroposteriorly, as possible, in the region of the second bicuspids and first molars, in order to seat the dentures against the supporting tissues with equal pressure, and in turn insure retention and stability of both dentures. The proper placement of forces, combined with the free gliding balanced contacts of the teeth, will help to preserve the

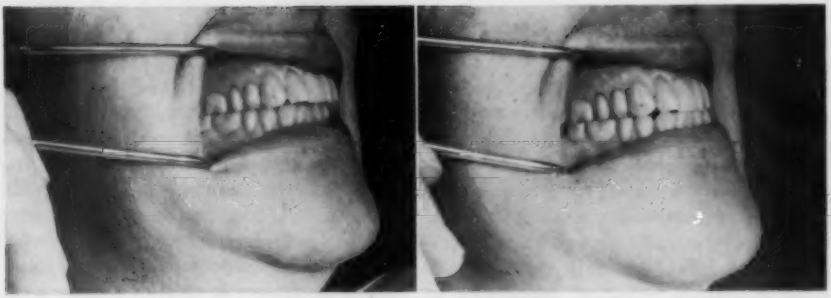


Fig. 6 • Left: Teeth in centric position, showing overjet of 4.5 mm. Right: Same patient; free gliding and balanced protrusion are evident

health and comfort of the supporting tissues, and provide freedom to the other components of the masticatory organ. All factors will function in harmony. In eccentric movement, there should be merely a gliding contact of the anterior teeth with balanced pressure on the posterior teeth, to avoid dislodging factors and destruction of the anterior ridges.

DYNAMIC MOVEMENTS

Dynamic or functional movements are made with a bolus of food interposed between upper and lower dentures, under biting stress. It is during this eccentric power movement on resilient food that the form of the occlusal surface of posterior teeth is of such paramount importance.

For many years dentistry has been seeking to make a lower denture that would be stable under unilateral biting stress; in other words, one that would withstand the tipping leverage when food is being crushed on one side. Because of the greater retention of the upper denture, any mismanagement of directional forces before the teeth reach occlusal contact tends to occur at the expense of the lower denture, thus making it unstable.

During mastication, while closing into a resilient bolus of food such as meat, the increased pressure of the stroke will not set up dislodging forces if the center-crest tooth is used. All of the components are in a better and more logical position for a power stroke. The center crests of the lower teeth are in a favorable position over the ridge. The sloping occlusal surfaces direct the force lingually. The point of origin of force, being very near the center of the teeth buccolingually, provides a directed force that will not unseat the dentures under biting stress.

PROTRUSIVE MOVEMENTS

The importance of protrusive movements is often minimized in articles discussing occlusion and articulation. The protrusive movement is just as important as any other movement. It is impossible to dictate a set of rules as to where, how, or when the patient shall bite or move. The patient expects the dentures to be comfortable and stable in all movements. Protrusion is necessary for incisal movement and for speech. It is used in combination with many lateral movements in the act of chewing, and naturally there is a slight protrusion as a result of adaptation.

In instances of Class II malocclusion, an overjet of 5 or 6 mm. or more may be present (Fig. 6). With anatomic teeth, patients with this malocclusion comprise one group of "problem or difficult cases,"

simply because in any protrusive or lateral protrusive movement, any contact of the cusps of anatomic teeth moves or rocks the dentures. Patients with Class II malocclusion are pointed out because the discrepancy is more apparent in this type, but the moving of the denture when anatomic cusp teeth are used is no more annoying or uncommon than it is in more ideal maxillomandibular relations. Interdigitating cusps of anatomic teeth cannot move in contact, into protrusion, with a gliding, nontraumatic action.

BENNETT MOVEMENT

Granger[7] says:

> The Bennett movement is also a power movement . . . it is a bodily side shift in lateral excursion . . . if during lateral excursion, the condyle on the working side made a simple rotation, then the Bennett movement would not present any problem. As the condyle is rotating on the working side, it is also moving bodily across the fossa. The mandible is describing a path around a moving center.

Boucher[8] observes, "Most articulators do not duplicate the Bennett movement."

The center-crest tooth overcomes the influence of the Bennett movement simply by a slight rotary movement of the center crest of the lower teeth on the sloping surfaces of the upper posterior teeth. This produces rise without torque or interference, and at the same time balances the dentures as the mandible slides laterally. It is in the natural dentition and in the use of anatomic teeth in prosthetics that the Bennett movement is troublesome.

COPING WITH CHANGING RELATIONS

Center-crest tooth blocks, when the technic described is employed, can withstand slight changes in relationship; at the same time there is no change in comfort, balance, stability or efficiency.

As a result of the slight adaptation of the supporting tissue to the dentures, the mandible goes upward and forward, but the condyles do not leave their centric position. The shift of pressure to the anterior is nullified, because in any protrusive movement the buccal slopes of the lower tooth blocks move in balanced contact against the mating buccal slopes of the upper tooth blocks. The pressures remain on the posterior teeth. There is free gliding movement because there are no cusps to lock or interfere. There is no interference to prevent the muscles from taking the mandible back to centric position, and there is no resulting malocclusion to produce soreness of the ridges. The patient will be comfortable and the teeth will be in occlusal balance in any mandibular position. The patient will not have to grope in an effort to find a position in which mastication is possible.

REMARKS

The tooth and technic described herein have been used over five years. They have proved successful under varying conditions of size, shape and relationship of the ridges.

The author is a denture wearer and has made numerous comparisons.

Balance and stability are such that most of these dentures are made roofless. Some are made both roofless and flangeless. The roofless denture is not a new idea in dentistry; neither is the flangeless denture. The roofless denture has been reintroduced from time to time and has met with occasional or partial success. Its failure in the past may be attributed to the same causes of denture failure and soreness as have been emphasized in this article.

CONCLUSION

The problems of ridge soreness, loss of tissue and bone, and general dissatisfac-

7. Granger, E. R. Functional relations of stomatognathic system. J.A.D.A. 48:638 June 1954.

8. Boucher, C. O. Occlusion in prosthodontics. J. Pros.Den. 3:633 Sept. 1953.

tion, usually can be traced to the trauma resulting from the inability of maintaining cuspal relations after placement of the dentures. Cuspal relationships usually are lost, even though precision technics and elaborate equipment are employed. Only the instances in which there was completely healed supporting tissue and bone are discussed herein. Changes of the tissue with an immediate denture are expected and unavoidable, however, and more readily result in loss of all relationships. In making treatment dentures, there is less soreness, the former relations can be more easily re-established, and patients are happier, if the tooth and technic described herein are used.

The dentist's goal should be to produce stable, comfortable, efficient, esthetically acceptable dentures for his patients, and these conditions should be maintained over a reasonably extended period of time. The patient's comfort, ability to chew with no wobble or clicking (displacement), and with all-round satisfaction, must be achieved. In accepting the patient, regardless of the fee, the dentist has taken on the obligation of maintaining (1) the health of the tissues and (2) the harmonious function of the masticatory organ. It can be done.

Thought and effort have been directed toward treatment of the problem so that all parts of the dynamic masticatory system will function collectively as a biological unit. The objective has been to integrate all of the basic principles involved in the making of dentures and to incorporate them into a simple yet definite technic.

In order to carry out all of the technical procedures of bite registration and not violate any of the physiological or anatomic principles concerned, it was necessary to develop the adjustable occlusal plane recorder. Through the use of this adjustable recorder, the achievement of normal function and harmonious relations has been simplified. The correct functional occlusal plane, in harmony with the temporomandibular joint, can now be assured. It is a vital factor in the production of integrated relations.

The variability of mandibular pathways requires a form of occlusal surfaces of the teeth that will provide equal, simultaneously balanced contact to seat the dentures in all excursions, without interference. These requirements are met by the use of center-crest posterior teeth. This form provides stability in the denture, and slight changes in relations can be withstood.

Harmonious relations are recorded in the mouth, but precision must be built into the dentures in the laboratory. When the occlusal guide plate is used, the plane and relations, as recorded and sealed in the mouth, are carried through the laboratory, thus making sure that none of this important information is lost.

This method simplifies the procedure for the making of complete dentures by eliminating the necessity for finding the pathways of cusps, locating the hinge axis, the use of the face-bow, check bites and transfers, and it eliminates occlusal corrections.

The making of successful dentures requires that the dentist "restore and maintain the normal physiology of the mouth, seeking to cooperate with these structures rather than causing them to resist and cause pathologic conditions."[9]

4708 Van Nuys Boulevard

9. Perry, H. T., and Harris, S. C. Role of neuromuscular system in functional activity of the mandible. J.A.D.A. 48:665 June 1954.

Preservation of the dental pulp in deep seated cavities

Harold Berk, D.D.S., Bethesda, Md.

The response of the dental pulp to deep-seated caries and the agents used in restorative dentistry are major factors in determining the operative treatment of choice. It has been accepted as fact that involvement of the dentin effects a response in the underlying pulp.[1-6]

Embryologically and physiologically the pulp and dentin are closely related, and throughout life their relationship is a dynamic one. Injury to the dentin in the form of caries evokes a response in the pulp beneath the area of injury which is characterized by the formation of secondary dentin.[7, 8] Whether the pulp suffers irreparable damage seems to depend on: (1) the speed and quantity of secondary dentin formation resulting from irritation caused by the carious process;[9] (2) the degree of insult to the pulp inflicted by the dentist in his operative procedure, and (3) the choice of filling material.

A basic necessity in operative dentistry is the removal of all caries. If all carious dentin is not completely excavated, there is no way to determine whether sufficient secondary dentin has been formed to protect the pulp or whether the carious process has penetrated into the pulp. This information is necessary in order to establish a plan of treatment. Therefore, anything short of removal of all caries represents a therapeutic compromise.

After the carious dentin in a deep cavity has been removed completely, the pulp must be protected against irritation by sterilizing agents, cements and restorative materials.[10, 11] The additional trauma caused by these agents may be enough to interfere with the healing mechanism of the pulp or cause necrosis. It is not unusual for the dentist to discover in the course of roentgenographic examination that a previously—and assumed successfully—filled tooth contains a necrotic pulp, yet does not cause pain. Such a

Assistant professor, department of oral pediatrics, Tufts University School of Dental Medicine, on leave of absence. At present, dental surgeon, U. S. Public Health Service, National Institutes of Health.

1. Gurley, W. B., and Van Huysen, G. Histological changes in teeth due to plastic filling materials. J.A.D.A. & D. Cosmos 24:1806 Nov. 1937.

2. Manley, E. B. Experimental investigation into early effects of various filling materials on the human pulp. Proc. Roy. Soc. Med. 34:693 Sept. 1941.

3. Manley, E. B. Review of pulp reactions to chemical irritation. Internat. D.J. 1:36 Dec. 1950.

4. Zander, H. A. The reaction of dental pulps to silicate cements. J.A.D.A. 33:1233 Oct. 1946.

5. Nygaard-Ostby, B. Pulp reactions to direct filling resins. J.A.D.A. 50:7 Jan. 1955.

6. Shroff, F. R. Effects of filling materials on the dental pulp. An histological experimental study with special reference to synthetic porcelain. New Zealand D.J. 42:99 July; 145 Oct. 1946; 43:35 Jan. 1947.

7. Fish, E. W. The physiology of dentine and its reaction to injury and disease. Brit. D.J. 49:593 June 1928.

8. Bodecker, C. F., and Applebaum, E. The variable permeability of the dentin and its relation to operative dentistry. D. Cosmos 74:1171 Dec. 1932.

9. Seltzer, S. Medication and pulp protection for the deep cavity in a child's tooth. J.A.D.A. 39:148 Aug. 1949.

10. Zander, H. A. Treatment of dentin before insertion of restorations. Internat. D.J. 4:693 Sept. 1954.

11. Zander, H. A., and Peiko, I. Protection of the pulp under silicate cements with cavity varnishes and cement linings. J.A.D.A. 34:811 June 15, 1947.

failure can be prevented, in most instances, by the proper selection of a protective lining or filling material.

PULP PROTECTION

It has been shown that calcium hydroxide when used as a liner protects the pulp against chemical irritation.[12,13] A liquid suspension of calcium hydroxide in aqueous methyl cellulose solution (Pulpdent Liquid) has been particularly effective in providing protection against chemical irritation when applied under silicate cement,[14] probably one of the most irritating filling materials used in dentistry. Histological sections of teeth, after this liquid preparation has been used as a liner under silicate restorations, reveal normal, healthy pulps, free from inflammatory changes (Fig. 1, above). It is for this reason that this preparation has been chosen for use over all vitally exposed dentin prior to the placement of a cement base or silicate restoration.

Because of its consistency, a thin layer of this liquid preparation is easily applied to the dentin with any simple applicator such as a spoon excavator, pellet of cotton, paperpoint or camel's-hair brush. After the dentin is completely coated, it is dried by a gentle stream of air until a dull white film develops. Immediately after the dentin is so coated, sensitivity of the prepared tooth is greatly reduced, and frequently is completely controlled. Since this lining material is water miscible, any excess around the margins may be removed by wiping with a moist pellet of cotton. If desired, mechanical removal with an explorer or similar instrument is effective. When a cement base is placed over this liner, the patient experiences no pain. The neutralizing effect of the alkaline calcium hydroxide on the free acid may explain this phenomenon. Thus an inlay or crown can be cemented in a deep preparation after this liner has been applied, without creating pain or discomfort.

Often in the course of excavating a deep carious lesion, a minute opening into the pulp chamber is created which is unnoticed by the operator. That this opening is not always immediately apparent has been ascribed in part to the ischemic effect of local anesthesia on the pulp.[15] Under such circumstances it is very important that the agent used to line the pulpal floor be capable of enhancing the normal healing mechanism of the pulp while protecting it from chemical irritation. Histological evidence has shown that calcium hydroxide, in addition to providing protection against chemical irritation, may also stimulate formation of a new layer of dentin over the region of exposed vital pulp tissue (Fig. 1, below).[16-19]

PULPAL RESPONSE TO CALCIUM HYDROXIDE

Healing of the pulp under calcium hydroxide and calcium hydroxide-methyl cellulose paste when used for pulp capping in human beings and in dogs' teeth has been described.[20,21] Studies were made of histologic sections of human teeth obtained at intervals ranging

12. Zander, H. A.; Glenn, J. F., and Nelson, C. A. Pulp protection in restorative dentistry. J.A.D.A. 41:563 Nov. 1950.

13. Massler, M., and Silberkweit, M. Effects of filling materials on growing dentin in the incisor of the albino rat. (Abst.) J.D.Res. 33:712 Oct. 1954.

14. Berk, H. Maintaining vitality of injured permanent anterior teeth. J.A.D.A. 49:391 Oct. 1954.

15. Nyborg, H. Healing processes in the pulp on capping, vol. 13, supp. 16. Stockholm, Acta Odontologica Scandinavica, 1955, p. 113.

16. Hermann, B. W. Dentinobliteration der Wurzelkanäle nach Behandlung mit Calcium. Zahnärztl. Rundschau 21:887, 1930.

17. Teuscher, G. W., and Zander, H. A. A preliminary report on pulpotomy. Northwest. Univ. Den. Res. & Grad. Quart. Bul. 39:4 Dec. 5, 1938.

18. Castagnola, L., and Orlay, H. G. Direct capping of the pulp and vital amputation. Brit. D.J. 88:324 June 16, 1950.

19. Cabrini, R. L.; Maisto, O. A., and Manfredi, E. E. Proteccion con hidroxido de calcio de la pulpa sana expuesta experimentalmente revista. Odontologia 41:293 July 1953.

20. Berk, H. The effect of calcium hydroxide-methyl cellulose paste on the dental pulp. J. Den. Children 17:65 Fourth Quart. 1950.

21. Berk, H., and Cohen, M. M. Histological evaluation of pulpotomy. (Abst.) J.D. Res. 33:647 Oct. 1954.

Fig. 1 • Above: Photomicrograph of human tooth five weeks after liquid suspension of calcium hydroxide in aqueous methyl cellulose solution was used as cavity liner under silicate cement. A: site of cavity preparation; B: normal dentin; C: vital pulp with normal pulp tissue. Below: Human tooth two months after pulp amputation in which calcium hydroxide-methyl cellulose paste was placed in contact with remaining pulp tissue. Pulp chamber is walled off by newly formed dentin consisting of: A: rapid forming irregular dentin that appears to contain entrapped fibroblasts; B: dense layer of regular tubular dentin which ends against pulp in predentin zone. A continuous layer of new odontoblasts apparently formed from undifferentiated mesenchymal cells are visible at C and vital pulp tissue at D

from three hours to two and one-half months after pulpal amputation and treatment with calcium hydroxide-methyl cellulose paste. Healing in these teeth appeared to occur by organization of the blood clot, with fibroblastic activity resulting in the formation of a protective callus of organic collagenous tissue. Calcification of the tissue was then noted, with entrapped fibroblasts often visible in the irregular dentin. In this tissue, silver staining demonstrated argyrophilic fibers which appeared similar to the Korff's fibers (Fig. 2), normally seen in the embryonic development of the dentin.[22] In approximately one month, odontoblasts appeared—apparently formed by differentiation of mesenchymal cells—and then regular tubular dentin formation followed.

The presence of these argyrophilic fibers, followed by the formation of odontoblasts in a sequential pattern imitating the ontogenetic development of the tooth suggests strongly that the dentin formed is true dentin; thus it seems that the pulp is permitted, indeed, stimulated to repeat a pattern of dentin formation that will ensure its viability.

PULP CAPPING

Since the pulp heals so successfully after pulpotomy, an even greater incidence of success may be expected from pulp capping, where there is a smaller region of damaged pulp tissue and a large region of relatively intact adjacent pulp to aid in the mobilization of healing forces. The salutary effect of calcium hydroxide on the damaged pulp tissue, which results in the stimulation of odontoblast formation with consequent dentin generation, is responsible for the high rate of salvage now possible in vitally exposed carious teeth.

Evaluation of the clinical status of the dental pulp is essential to safeguard the vitality of the tooth; yet, the methods now available often yield misleading information. A pulp may contain a localized abscess and yet respond satisfactorily to pulp testing. Thus, to neglect to remove all caries for fear of creating an exposure into the pulp may carry with it the even greater hazard of jeopardizing the tooth. If the pulp is exposed on removal of all

22. Maximow, A. A., and Bloom, W. Textbook of histology. Philadelphia, W. B. Saunders Co., 1952, p. 355.

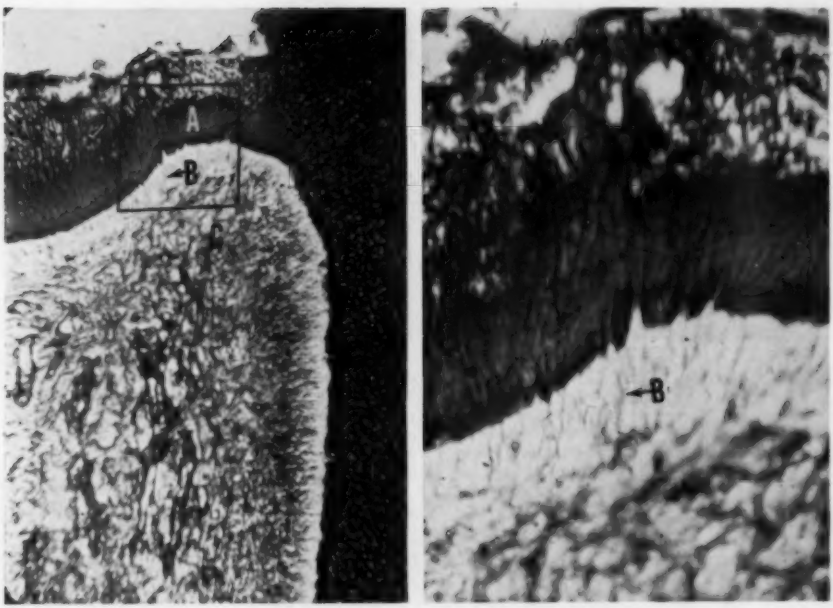


Fig. 2 • Left: Photomicrograph of human tooth two months after pulp amputation in which calcium hydroxide-methyl cellulose paste was placed in contact with remaining pulp tissue. Section was stained with silver nitrate. A: newly formed regular dentin; B: argyrophilic fibers resembling Korff's fibers; C: pulp. Right: High power view of area outlined in picture at left. Argyrophilic fibers are demonstrated

caries, however, certain criteria are essential for successful pulp capping: (1) the exposed pulp must be vital; (2) bleeding, if present, should be slight and easily controlled; (3) ideally, the pulpodentinal membrane should be intact, or if penetrated mechanically, should be free of lacerations. If these criteria are fulfilled, the size of the exposure, within fairly wide physiologic limits, is not too important. No longer must a tooth with an exposure larger than a pinhead be considered as having a poor prognosis for survival.

Pulp capping is not recommended if there is: (1) contamination by saliva; (2) laceration forcing contaminants into the deeper structures of the pulp; or (3) pus, serum, or necrotic cells indicating long-standing infection not limited to surface pulp.

PULP CAPPING TECHNIC

The technic employed for successful pulp capping must have the following objectives: It must promote healing of the pulp, stimulate growth of new dentin, and protect the pulp from additional irritation. This can be accomplished readily by the application to the dentin and exposed pulp of a liquid and paste respectively, consisting of calcium hydroxide and methyl cellulose, which is covered with zinc phosphate cement. The cavity must be completely prepared and ready to accept a restoration before the pulp is exposed.

Black's[23] classical cavity preparation,

23. Black, A. D., editor, G. V. Black's operative dentistry, ed. 7. Chicago, Medico-Dental Publishing Co., 1936, p. 137.

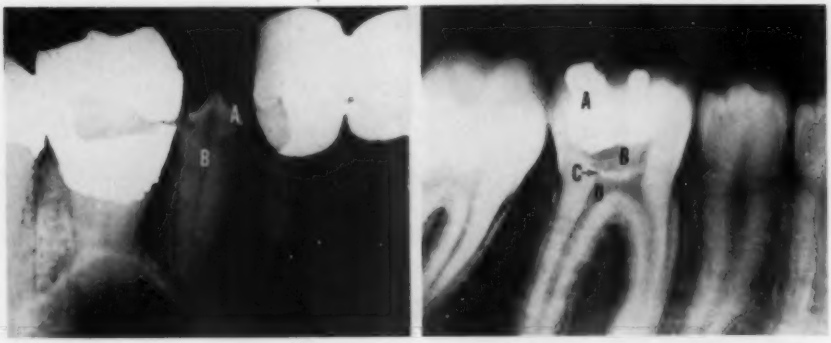


Fig. 3 • Left: Bicuspid of 38 year old woman three months after capping with calcium hydroxide-methyl cellulose paste. This tooth was reopened to demonstrate new dentin which had formed at site of exposure. A: radiopacity representing layer of sclerotic dentin bridging pulp exposure; B: pulp. Right: Molar from 18 year old boy five months after successful pulp capping with calcium hydroxide-methyl cellulose paste. A: amalgam restoration and cement base; B: calcium hydroxide-methyl cellulose paste; C: dense layer of sclerotic dentin depicting healing of exposed pulp tissue with new dentin formation; D: pulp

outline form, retention and resistance form, convenience form, and planing of the enamel walls are all completed prior to determining whether the pulp is exposed. At this point the final steps—removal of the remaining caries and toilet of the cavity—are undertaken. If an exposure is anticipated, the rubber dam should be applied, and the prepared cavity freed of saliva and other contaminants. It is advisable to use a sharp spoon excavator to remove the remaining decay.

If exposure of the pulp occurs, a layer of calcium hydroxide-methyl cellulose liquid is applied to all denuded dentin as previously described. The exposed pulp is then covered with the paste preparation of calcium hydroxide in methyl cellulose which will cover the exposure and which, by virtue of its cohesive and adhesive properties, will remain in position. A fine stream of air will help dry the paste and create a crust that will support a cement covering. This paste need not be completely hardened before the cement is applied.

A thin mix of zinc phosphate cement, approximately 2 parts powder to 1 part liquid by weight, is flowed into the cavity over the paste and liner, covering the entire pulpal floor, care being taken not to apply pressure on the pulp. The pulp is now protected against chemical, mechanical, and thermal irritation. After the cement hardens, it is trimmed and used as a base for the final restoration which should be inserted at the same sitting, if possible, to prevent the loss or dislodgement of the pulp capping material while the pulp is initiating the process of repair.

A successful pulp capping usually can be followed clinically by the taking of roentgenograms, and the demonstration of the characteristic radiodensity may be interpreted as a layer of calcified tissue bridging the gap where originally decay and the bur created a defect (Fig. 3).

PULP AMPUTATION

The treatment of uncomplicated vital pulp exposures by pulp capping is relatively simple and effective. The presence of injured, contaminated, or necrotic tissue requires more aggressive treatment if the tooth is to be saved. Pulp amputa-

tion is based on the removal of that portion of the pulp in which the inflammatory process has been localized by the defense mechanism of the body.

The objectives of pulp amputation are removal of all diseased and contaminated pulp tissue, promotion of pulp healing, and stimulation of dentin formation that will rehouse the pulp in a new and smaller chamber. The therapeutic agents used in this procedure will not accomplish these goals alone, unless care is employed to prevent contamination and undue trauma to the remaining healthy pulp tissue.

Pulp amputation has been conventionally recommended for use in vitally exposed permanent teeth in young people or for the deciduous dentition, but not generally for adults.[24] That age is of relatively little importance is suggested from experience with adults who have had pulp amputation or capping with calcium hydroxide-methyl cellulose paste. Pulp amputation followed by treatment with this paste in patients up to 59 years of age has been followed roentgenographically for approximately five years (Fig. 4). The newly formed dentin bridge usually is visible roentgenographically within three months, and there appears to be no further evidence of growth or change in its density. These observations suggest that the new bridge of dentin is formed within the first three months after treatment, after which odontoblastic activity ceases until it is again stimulated. Histologic sections were made five months after pulp amputation in teeth of a 42 year old woman. These sections showed evidence of normal healing with a well formed dentin bridge (Fig. 5).

The technical details of pulpotomy in anterior teeth have been described previously.[20] Reiteration of the principles

24. Boyle, P. E., editor. Kronfeld's histopathology of the teeth and their surrounding structures, ed. 3. Philadelphia, Lea & Febiger, 1949, p. 154, 155.

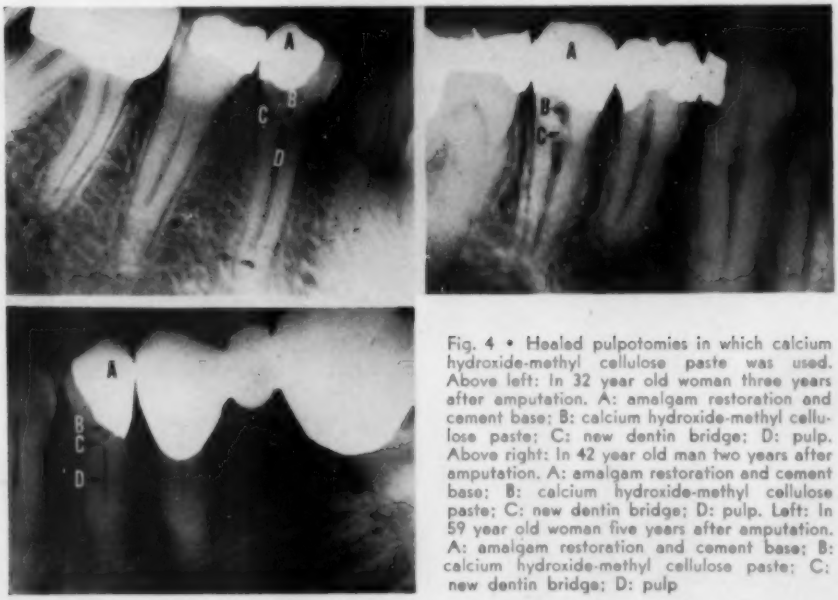
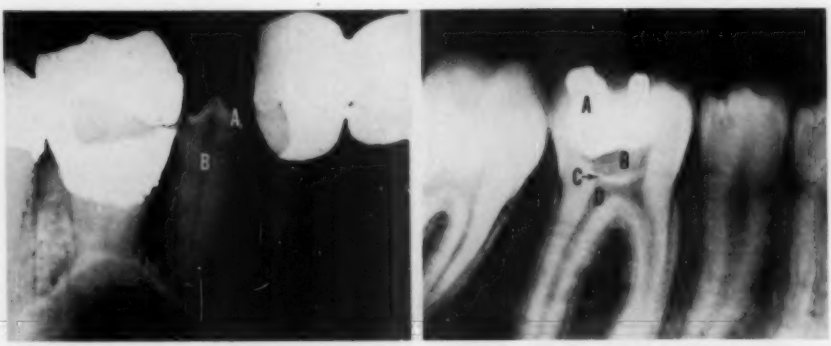


Fig. 4 • Healed pulpotomies in which calcium hydroxide-methyl cellulose paste was used. Above left: In 32 year old woman three years after amputation. A: amalgam restoration and cement base; B: calcium hydroxide-methyl cellulose paste; C: new dentin bridge; D: pulp. Above right: In 42 year old man two years after amputation. A: amalgam restoration and cement base; B: calcium hydroxide-methyl cellulose paste; C: new dentin bridge; D: pulp. Left: In 59 year old woman five years after amputation. A: amalgam restoration and cement base; B: calcium hydroxide-methyl cellulose paste; C: new dentin bridge; D: pulp



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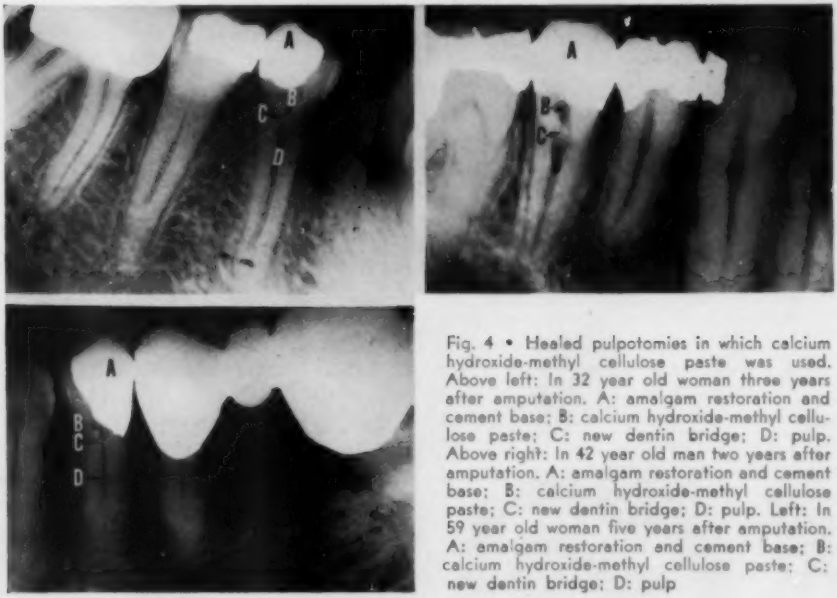

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Fig. 5 • Photomicrograph showing healing five months after pulpotomy in 42 year old woman. Calcium hydroxide-methyl cellulose paste was placed in contact with remaining pulp tissue. A: irregular dentin containing entrapped fibroblasts; B: regular tubular dentin; C: new continuous odontoblastic layer; D: vital pulp tissue

underlying successful pulpotomy follows, along with a brief outline of the variations in technic for bicuspids and molars.

Profound anesthesia and sterile technic must be employed. Access to the pulp in anterior teeth is gained from the lingual; in bicuspids from the axio-occlusal wall, either mesial or distal; and for molars from the occlusal or axio-occlusal. All of the dentin overlying the coronal pulp is removed prior to amputation. This can be accomplished readily by circumscribing the dentin overlying the coronal pulp with a round bur, then gently lifting out the detached area of dentin.

The pulp should be amputated with a sterile sharp curet or spoon excavator. This is done by sliding the sharp edge of the instrument down the lateral aspect of the chamber opposite the original point of exposure, severing the attachment to the radicular pulp in a clean horizontal stroke, and lifting the detached coronal pulp out of the chamber.

Caustic agents should not be applied to the cut surface of the pulp. Hemorrhage is controlled by light pressure, applied with a pellet of cotton, after which the pulp is ready to be capped. In order to provide suitable protection for the pulp and to stimulate the formation of new dentin, a layer, about 2 mm. thick, of calcium hydroxide-methyl cellulose paste is placed over the amputated stump and covered with zinc phosphate cement. After hardening, the cement is trimmed and the final restoration is placed at the same visit.

DISCUSSION

The high incidence of success with these two procedures often eliminates the need for root canal therapy. Success may result from pulp capping a minute exposure, an entire pulpal horn, or in instances where there has been partial removal of the coronal pulp tissue,[25] complete removal of the coronal pulp tissue, or even removal of part of the radicular pulp tissue. In general, however, if pulp amputation is indicated, the entire coronal portion of the pulp should be excised to assure removal of all of the contaminated tissue.

There are times when both pulp capping and pulp amputation fail. Even though a new bridge of dentin may form, contamination or penetration of the deeper tissues of the pulp by bacteria or their toxins[26] may stimulate an inflammatory response and an edema is created that results in strangulation of the blood supply and eventual necrosis of the pulp. Should this occur, root canal therapy is still available.

Successful treatment of cariously infected teeth depends on the removal of all caries. If this results in a simple pulp exposure, pulp capping is the treatment of choice. In the presence of contamination, pulp amputation is necessary so that

25. Chatterton, D. B. Pulp curettage. J.A.D.A. 45:462 Oct. 1952.

26. Teuscher, G. W. Treatment of pulp in primary teeth. Internat. D.J. 4:821 Dec. 1954.

healthy tissue remains to initiate and complete the healing process.

SUMMARY

A treatment plan to assure survival of teeth with deep carious lesions, based on the response of the pulp to caries and to calcium hydroxide when used as a protective agent, has proved successful.

Calcium hydroxide in a methyl cellulose vehicle has a salutary effect on the pulp. Its use for coating dentin, for pulp capping, and after pulp amputation has resulted in a gratifying incidence of success.

In applying this material, certain conditions favor one or another form of treatment. The following is an outline of the criteria established for selecting the procedure of choice in the treatment of teeth affected by deep seated cavities.

Indications for Cavity Lining • All denuded dentin should be coated with a protective film of calcium hydroxide prior to the insertion of any filling material or cementation of crowns, bridges, inlays or splints.

Indications for Pulp Capping • Pulp capping is indicated if there is mechanical or carious exposure of the pulp of a vital tooth, in the absence of contamination, infection or necrosis; or if intact pulpodentinal membrane is present. If penetration has occurred, this penetration should have been by mechanical means only.

Contraindications for Pulp Capping • Pulp capping is contraindicated if there has been carious or mechanical exposure in which the deeper structures of the pulp have been contaminated; or if gross infection, localized or generalized, is present, as evidenced by exudation of pus, serum or necrotic cells.

Indications for Pulp Amputation • Pulp amputation is indicated if there has been (1) exposure of a vital pulp with a localized abscess or infection in the coronal portion of the pulp; (2) laceration of the pulpodentinal membrane with introduction of contaminants; (3) exposure caused by traumatic injury[20], or (4) a doubtful prognosis for pulp capping.

Contraindications for Pulp Amputation • Pulp amputation is contraindicated if there is (1) necrosis of the pulp, or (2) roentgenographic evidence of a region of apical rarefaction.

CONCLUSIONS

1. A liquid suspension of calcium hydroxide in aqueous methyl cellulose, when applied over denuded dentin, protects the dentin and the pulp from chemical irritation and eliminates pain when a cement base is placed in a deep-seated cavity, or when silicate restorations are used. Thus, the pain produced by cementing crowns, bridges, inlays, or splints may be controlled effectively.

2. After vital exposure, the pulp can be protected and permitted, even stimulated, to produce new dentin by calcium hydroxide in a methyl cellulose vehicle. The size of the exposure is of relatively little importance.

3. After amputation and treatment with calcium hydroxide-methyl cellulose paste, the remaining pulp can be stimulated to form new dentin and rehouse itself in a smaller pulp chamber. The age of the patient is of relatively little importance.

The dentist in civil defense

Russell W. Bunting, D.D.S., Ann Arbor, Mich.

What role will dentists play in a national disaster? That is a question that 90,000 dentists have been asking for some time. During the past five years, as dental consultant in the Federal Civil Defense Administration, it has been my job to determine the role of dentistry in civil defense. When I went into the agency in July 1951, I found that the program of casualty care had been well defined in a manual AG 11-1 entitled *Health Services and Special Weapons Defense.* This has been generally accepted as the "bible" for all civil defense programs. With the increasing estimate of casualties due to the newer nuclear weapons, however, this manual is now being reviewed with this factor in mind.

In this manual, in view of the vast number of casualties and the lack of adequate medical facilities to care for them, the need for auxiliary medical personnel was stressed. Among these, the dental profession was given considerable prominence. In the plan of organization dentists and veterinarians were assigned to first-aid stations as assistants to physicians and surgeons. It was also stated that in case no physician was available, the dentist should take charge and direct the station. This revolutionary idea came somewhat as a shock to the dental profession. It is based on the premise that dentists, although limited to a specific field, are trained in the basic medical sciences. They are accustomed to working with physicians in health services; they are used to dealing with patients in pain, and they are noted for their dexterity. Furthermore, in the war, many dentists in the Armed Forces rendered outstanding service in caring for the battle casualties. After the explosion on the U.S.S. Bennington, the Medical Corps was entirely incapacitated and a Dental Corps officer was the only person on board who could care for the injured. He assumed this task and performed the casualty services so well that he was awarded a citation. Similar situations have also occurred on ships in the Pacific and in the Army on the battlefield. Many dentists also acted as assistant surgeons in army hospitals.

This pronouncement, however, came as a distinct shock to dentistry. In the past it has been concerned chiefly with its own specific field of health services, and few dentists have had any training or experience in caring for general bodily injuries. Dentists are not equipped to practice general medicine, nor do they wish to do so. And yet, in view of the exigencies which will arise in any all-out thermonuclear attack, they may be forced to assume some of these responsibilities. In a consideration of this prob-

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lem by the National Research Council, the following statement was made:

> At the request of the Army Dental Corps, the Committee on Dentistry has considered the role that the dentist should play in the medical aspects of civil defense.
>
> The Committee believes that in the initial tasks of first aid and evacuation the dentist, with his basic knowledge of medical sciences, should be assigned the same role as the physician; and that in later phases, his capabilities should be utilized to the utmost in providing treatment for the greatest possible number of casualties.
>
> It is therefore recommended that training in the management of mass casualties, comparable to that given to medical students in the program of Medical Education for National Defense, be provided for all dentists in the Armed Forces and in so far as possible for those in civilian life as well.

Captain Oesterling of the Navy, in discussing dental personnel training for emergency in care of mass casualties has said:

> During wartime battle conditions, the dental officer must lay aside his important health pursuits to become a partner of the medical officer in caring for battle casualties. Dental officers will be placed with emergency battle dressing station teams and will be expected to be able to assume the many responsibilities of treatment that may arise.

The question then arises—what is the attitude of the medical profession to the development of this auxiliary medical service? Does it approve of dentists assuming the treatment of general bodily disorders, even in an emergency, when no medically trained man or woman is available? In writing the manual, TM 11-9, *The Role of Dentistry in Civil Defense,* I consulted freely with the medical staff of FCDA and with many eminent members of the medical profession who are interested in civil defense. Without exception, they were most cooperative and positive in their opinion that dentists could be of great assistance to physicians in a national disaster. They urged me to include in the manual specific services which they believed dentists could perform, far more than I personally would have presumed to state. In all medical civil defense conferences the dentist is spoken of as an allied or paramedical worker and is included in all casualty services.

As yet, however, no official pronouncement has come from organized medicine recognizing such dental services or recommending training for them. One semiofficial statement has been made by Dr. Harold Diehl, chairman of the American Medical Association Council on National Defense as follows:

> These and other demands will create a grave shortage of physicians. Dentists, because of their specialized training and experience may be called upon as leaders of whole sections of emergency medical action.
>
> Dentists have an opportunity and an obligation to work with physicians in providing first-aid and emergency medical care in the event of an enemy attack or following a natural disaster. It is the primary responsibility of each dentist to be trained in all the techniques of emergency lifesaving measures, the extent of which would vary, depending upon local medical and health resources and the extent of casualties.

Other similar statements have been made by leaders in medical civil defense, notably Dr. Harold Lueth, chairman of civil defense in the American Hospital Association.

Thus it appears that dentists, in any great emergency, since their specific dental services cannot be performed, should work with physicians in the care of the injured as far as their capabilities will permit. This means that dentists should be integrated into health services planning for civil defense. It also means that dentists should be preparing to assume such responsibilities.

It is recognized that the average dentist in private practice would be of very little assistance in an operating room. He would have to be told every move he made and there would be no time for that. But, if he had had some training in first aid and some hospital experience in casualty care he might be of very great assistance. In an FCDA Emergency Hos-

pital exercise held in Brooke Army Medical Center, I surveyed the simulated casualties as they came into the Forward Treatment Center. From them I observed that a trained dentist might give valuable assistance to the surgeon at the operating table in 50 per cent of cases. For another 25 per cent he might have done all that was necessary, alone. In only 25 per cent were the injuries too critical for him to undertake, but he could have given some assistance.

In accord with this idea, the FCDA and the American Dental Association, during the past five years, have vigorously pushed a program of casualty care training in local dental societies. This consists of Red Cross first-aid and advanced casualty care services to be taught by the local medical society. In this, the seven training films released by the Navy have been widely used. As a result, many dental societies in all parts of the country have organized classes in training and have given large numbers of dentists basic casualty care instruction. This program has been well received whenever it was properly executed.

The FCDA has given three very successful courses for leaders in dental civil defense, many of whom have become outstanding workers in many states. During the past two years a *Dental Civil Defense News Letter* has been issued to a list of nearly 1,500 civil defense dentists.

It is evident that it would be impossible to indoctrinate every dentist in this country by any such program. Some progress has been made, but if any permanent and far-reaching results are to be obtained, other avenues must be explored. Among them are the dental schools. At the present time over half the schools are including training in emergency casualty care in their curriculums. If every school adopted this policy, each year over 3,000 young graduates would be entering practice with at least the basic knowledge of emergency medical services.

In addition there is a large group of dentists who each year are entering the Dental Corps of the Armed Forces. After two years most of them will go into private practice. Now that practically all the Armed Forces are giving the Dental Corps training in casualty care, each year there will be a large number of dentists so trained. Furthermore, the reserve corps of each of the armed services and the United States Public Health Service constitute an important pool which should be trained for emergency casualty care.

The American Dental Association made a strong statement to the Military Operations Subcommittee of the Committee on government operations of the House of Representatives June 21, 1956, which was printed in the September 1956 issue of THE JOURNAL OF THE AMERICAN DENTAL ASSOCIATION. In this, the whole field of dental civil defense participation has been well presented and includes the following statement:

> . . . our experience would indicate the need for a closer relationship of this program with the programs of the medical and dental corps of the armed services, particularly their reserve programs. Although it is recognized that these corps have a first duty to members of the military, they seem to be fitted by training and mission to assume a major role in the civilian casualty care program, particularly in the area of planning and training. Further, in an actual emergency, it is quite probable that these corps would be the proper organization to coordinate both military and civilian aspects of casualty care. In such an event, the total population of the disaster area would undoubtedly be under martial law, and perhaps, undergoing some degree of mobilization so that the military would be a rallying point for all civilians. Thus, the relationship between civilian and military responsibility and activity in the event of an atomic disaster would, in our opinion, be so close as to require a consideration at this time of developing a similar relationship between the civilian casualty care program and the mission of the medical and dental corps of the armed services. At the very least an effective program of civilian casualty care will require the closest cooperation with the military and its plans for such an emergency.

The Army has, in the past, actively cooperated with the FCDA. It has been active in the development of the FCDA Emergency Hospital and has conducted two major exercises in testing it at Fort Meade and at the Brooke Army Medical Center. It has offered courses in training in emergency casualty care at frequent intervals at Walter Reed and Brooke during the past five years, in which 135 dentists have been enrolled. It also is now offering training to the active Dental Corps and reserve officers.

The Navy has always been conscious of the need for training Dental Corps officers in medical casualty services and has given it considerable attention. The Navy also has developed very valuable teaching aids, such as the "bleeding dummy," the artificial arm and neck, as well as audio-visual aids which they have made available for civilian training. These are valuable contributions.

Members of the dental profession stand ready to cooperate with the medical profession to the fullest extent, as far as their abilities permit, in any great emergency. They only ask two things; one, that a clear definitive statement be made by medicine as to the nature and extent of such dental cooperation desired, and second, that the members of the medical profession and the Medical Corps of the Armed Forces lend their aid and encouragement in training dentists to meet these responsibilities.

The dental profession should prepare to serve in any national disaster by learning how to administer casualty services outside of the mouth. They should know what to do for general bodily injuries. This will require training in local dental society casualty care programs and in hospitals, in student training in all dental schools, and in the active and reserve corps of each of the Armed Forces branches.

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Hunger Versus Appetite • For an understanding of the activities of the gastrointestinal system, it is valuable to recognize the differences between hunger and appetite. Hunger is typified by two sensory components: the first is a vague generalized weakness that may be related to sensory nerve impulses from the digestive tract and perhaps to lowered blood sugar; the second component is the more acute sensation in the epigastric region of hunger pains, intermittent short periods of tension or pressure. These contractions appear to be inherited with relatively little modification by the experiences of the individual. They have a relatively fixed pattern of occurrence with about 30 minutes of activity after one and a half or two hours of inactivity. Hunger can be stopped by solids in the stomach regardless of the degree of nourishment contained in the solids.

Appetite, though it commonly accompanies hunger, may be present without it or present long after hunger is satisfied. The components of appetite are principally psychological and are the result of the past experiences of the individual. Hence, we learn to like and dislike foods from childhood on until the patterns of food distribution, quantity, and so on, become thoroughly fixed in adult life. The most pronounced disorder of appetite, overeating, leads to obesity and may be related to the use of food as a means to allay tension, anxiety, guilt, frustration, anger, self-depreciation, sorrow or depression. In these cases, food ingestion patterns can only be altered effectively when circumstances provide "non-food" supplies from the needed sources. *James H. Shaw.*

Cases and Comments

TIC DOLOREUX FROM DENTAL PULP

By G. Wilbur Northrup, D.D.S., Ellicottville, N. Y.

A 38 year old man complained of a sharp, lancinating pain which occurred intermittently for short periods over the left upper central incisor.

The pain had occurred occasionally for about a year. When the patient was seen October 15, 1956, the pain had become acute. The left central incisor was slightly tender to percussion. It was nonvital. The tooth was opened, and no pus or discharge was present.

Moist pulpal remnants were removed, and the canal was irrigated with a sodium hypochlorite solution. The patient was dismissed, but the pain persisted, and codeine was prescribed.

On October 16, the tooth was reirrigated, and an aromatic solution of phenol (Black's 1, 2, 3) was inserted for nerve filament sedation.

The patient now reported that vibration and shaving with an electric shaver could bring on pain. Pain was elicited in the dental office by drawing a roughened instrument handle along the incisal edge of the tooth.

The patient's physician was contacted, and vitamin B parenteral injections were instituted. Improvement was evident after a few hours.

Endodontic therapy was started October 19. A polyantibiotic paste (penicillin-bacitracin-streptomycin-caprylate sodium) was used. On October 20, the pulp canal filling was completed. Recovery was uneventful.

MULTIPLE CYSTS OF THE MAXILLAE

By Donald R. Mackay, D.D.S., St. Paul.

A 44 year old man had had pain for several months in the anterior region of the mouth. The contour of his face was normal in every respect. Two central incisors, a right lateral incisor and a right first bicuspid were present in the maxilla. On the left side, the incisal ridge of the cuspid tooth just showed through the gingiva. The investing tissues of the mouth appeared normal, and there was no bulging of the underlying bone.

Percussion of the central teeth produced some sensitivity, and they were somewhat mobile. Intraoral occlusion and intraoral periapical films were made of the maxilla. These films disclosed a large central cyst containing a supernumerary tooth in the region of the anterior teeth.

On the left side, another supernumerary tooth was situated on the lingual aspect of the maxillary sinus with what appeared to be a cystic region invading the sinus and extending back to the partially erupted tooth on that side. On the right side was a fully formed unerupted cuspid, the root apex in the sinus (illustration, above). A cyst extended from the crown back under the erupted bicuspid.

The patient was sent to his physician for a preoperative physical examination, the results of which indicated that he was in good condition. He was hospitalized and prepared for surgery. The patient was anesthetized with thiopental sodium, and a tracheal tube was inserted.

The mucous membrane was opened over the crest of the alveolar ridge from the second molar on the right side to the second molar on the left. The palatal flap was raised from a point just anterior to the nasopalatine foramen back to, but not including, the posterior palatine foramen. On the left side of the bony vault in the region where the first molar should have been, the surface of a diminutive supernumerary tooth was seen. It was removed, carrying with it the sac of a cyst which had extended well into the maxillary sinus. This cyst appeared to be of the follicular type.

The partially erupted left cuspid was removed, and another cyst, apparently of the radicular type, was seen near its apex. The cyst was opened into the maxillary sinus by means of a Partsch operation. The central cyst with its supernumerary tooth was enucleated cleanly, there being little tendency of the cyst wall to adhere to the bone.

On the right side, the bicuspid was removed, the roots of which were somewhat absorbed. The fully impacted unerupted right cuspid was next uncovered and removed; its root extended deep into the right maxillary sinus.

Under the crown of this cuspid was another cystic region which extended out into the medullary portion of the right malar process. A Partsch operation was performed on this last cyst by way of the tooth socket to permit draining into the maxillary sinus. The flap was closed with 20 interrupted sutures. Postoperative recovery was uneventful, and the tissue was entirely healed within one week.

Above: Preoperative occlusal roentgenogram of maxillae shows extensive destruction of bone due to expansive process of multiple cysts. Below: Six weeks postoperatively, occlusal roentgenogram demonstrates good regeneration of bone

No complications have been encountered since. Postoperative roentgenograms indicate that healing is progressing satisfactorily (illustration, below).

It is the opinion of the operator that many cysts in close proximity to the maxillary sinus should be opened into the sinus by a Partsch operation.

More use should be made of the cyst-antrum Partsch operation than of the oral cyst Partsch procedure. When such a procedure is undertaken, the opening should be widely extended so that there is no chance for the cyst wall to reestablish itself.

925 Lowry Building

ERUPTION OF MALPOSED TOOTH WITHOUT SURGICAL INTERFERENCE

By Joan Weyman, F.D.S., Newcastle upon Tyne, England.

In THE JOURNAL, February 1956 issue, page 195, Morton Thaler described the correction of an ectopic mandibular second bicuspid. The tooth was moved surgically into a more favorable position after the extraction of its deciduous predecessor and removal of the overlying bone. Moving the tooth involved some risk to the well-being of the pulp.

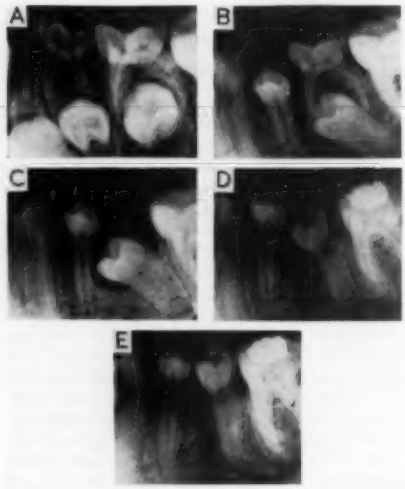
O. Henry (1931) showed a series of roentgenograms of a second mandibular bicuspid which was developing in a similar position, but whose development was very delayed. The extraction of the deciduous molar was followed by some closure of the space, and subsequently the bone overlying the bicuspid was removed surgically without moving the tooth itself. The space was opened by orthodontic treatment, and the tooth gradually erupted into its normal position. In the discussion which followed this report, Bowdler Henry described a similar instance.

The present report describes another case very like Dr. Thaler's, with the exception that the second bicuspid was facing mesially instead of distally. Treatment, in this instance, was even more conservative.

After extraction of the deciduous molar, the bicuspid was kept under observation, while a palatally placed maxillary cuspid was receiving orthodontic attention. The tooth continued its eruption, first in the original direction until it appeared impacted into the first bicuspid, and then it gradually uprighted itself, finally coming into its normal occlusion. There was no tendency to space closure.

It would be wrong to generalize from so few cases, but it should be borne in mind that while the eruptive force is still active, the tooth will move if it can possibly do so. The long axis of the bicuspid in all these instances has a slightly upward inclination, so that the eruptive force exerted in the direction of the long axis has an upward component. This suggests that there is an inherent tendency in the reported instances for the bicuspids to be guided upward by the adjacent surface of the contiguous tooth.

In the roentgenograms shown here it is obvious that the bicuspid was moving the whole time it was under observation until it came into occlusion. It is suggested that in conditions of this kind, after extraction of the deciduous predecessor which shows deficient root resorption, a probationary period should be given to see whether the permanent tooth will erupt without help. If movement of the



Eruption of malposed tooth without surgical interference. A: Position of tooth in nine year old patient. B: at 12 years, three months. C: 13 years, one month. D: 13 years, eight months. E: 14 years, five months

tooth in the bone ceases, or if its long axis is in a mechanically impossible direction for eruption, then surgical interference is justified, always provided that this is not left until completion of the apical closure and diminution of the eruptive force.

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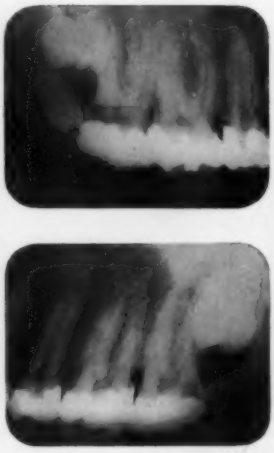
BILATERAL IMPACTION, SUPERNUMERARY TEETH AND CARIES

By Martin T. Siegel, D.D.S., Poughkeepsie, N. Y.

A routine dental examination of a 27 year old woman patient revealed maxillary left and right impacted third molars, maxillary left and right supernumerary teeth adjacent to the third molars and maxillary left and right disto-occlusal cavities extending into the pulp. There was pain in both maxillary regions.

Since the second molars were beyond restoration, they were removed along with the supernumerary teeth. Past experience shows that the third molars may move into the second molar position, and fairly good occlusion is obtained.

The case is of interest because of the nearly identical condition on the left and right sides



Bilateral impactions, supernumerary teeth and caries in second molars

of the maxilla. In such an instance, a differential diagnosis must be established to determine whether the pain resulted from the supernumerary teeth, the second molars or the impacted third molars. In this patient, pain was due to the second molars.

27 Cannon Street

SIMPLIFIED IMPRESSIONS FOR IMMEDIATE COMPLETE DENTURES

By Arthur S. Freese, D.D.S., New York.

The first and most fundamental step in the construction of an immediate complete denture is the impression. For the general practitioner, most impression technics for immediate dentures suffer from one of two faults—they are either overly simplified or overly complex.

The oversimplified impression technic consists entirely of an impression taken in an oversized tray filled with either reversible or irreversible hydrocolloid impression material. This method produces one of two bad results. The impression material can displace the border tissues to such an extent that the practitioner is faced with innumerable adjustments to the finished denture. Accuracy of detail is hopelessly lost. It is also possible for the impression to be short of the border tissues; then the finished denture has no retention. These simplified impressions often combine these two failings, over-displacing the border tissues in some regions and being short in others. The denture causes soreness and has no retention.

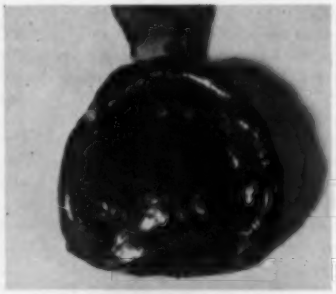


Fig. 1 • An over-sized soft aluminum impression tray is selected and trimmed until it is free of the attachments of the border tissues. Low-heat modeling compound is softened and placed in the tray, which is then seated in the patient's mouth. With the tray in position, the patient is instructed to run his tongue along his lips, suck in his cheeks, pull in his lips, and open and close his mouth. This preliminary impression is chilled only enough to permit withdrawal without too much distortion. After withdrawal, the preliminary impression is thoroughly chilled. The preliminary impression acts as the tray for the final impression.

Fig. 2 • All existing undercuts are relieved sufficiently so that the modeling compound tray can be inserted in the patient's mouth and withdrawn without breakage or distortion and without injury to the soft tissues of the mouth. The border extension of the modeling compound tray is again checked by softening one section at a time and instructing the patient to run his tongue along his lips, suck in his cheeks, pull in his lips and open and close his mouth. The border molding is completed.

Fig. 3 • Holes are drilled in the modeling compound with a no. 8 round bur, and the holes are undercut to grip the rubber impression material which will be used for the final impression. It is particularly important to have enough holes with undercuts to grip the rubber impression material, for the accuracy of this material depends to a considerable extent on the retention provided by the tray.

Fig. 4 • Rubber impression material is now mixed in accordance with the manufacturer's directions. It must be used immediately, or it thickens and will distort on removal. The rubber impression material is placed in the modeling compound tray and seated in the patient's mouth. After setting, the final impression is removed in the same manner as hydrocolloid impressions. A comparatively thin layer of the rubber material gives the greatest accuracy, so it must not be allowed to form a thickness of more than 3 or 4 mm.

Secondly, there is the impression technic that is too complicated for the busy general practitioner. There is a preliminary reversible or irreversible hydrocolloid impression. A cast is poured, and an acrylic resin tray is made on this cast. Border molding is done on this tray, usually with modeling compound. The edentulous regions are now recorded in zinc oxide and eugenol impression paste. Finally the teeth present and the immediate surrounding region are recorded in a plastic impression material, impression plaster or one of the hydrocolloid impression materials.

The general practitioner needs a relatively simple yet accurate technic which he can use with complete confidence when he wants to secure an impression for an immediate complete denture.

Properly handled, rubber impression material has the accuracy of a typical hydrocolloid impression material[1-4] and has the following distinct advantages over the hydrocolloids: (1) It will not displace the border tissues. (2) The impression does not have to be poured immediately. However, delay in pouring the rubber impression should not be encouraged. (3) If care is exercised in pouring and separating the cast, more than one cast can be made from the same impression.

Summary • A simplified means for obtaining an accurate impression for an immediate complete denture is here described. The impression is developed in three stages without requiring a special tray. The impression can be completed in one visit.

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Adjunct dentist (for prosthesis), Beth Israel Hospital.

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ACUTE SUBLINGUAL CELLULITIS

By Donald R. Mackay, D.D.S., St. Paul.

The patient, a 58 year old man, complained of a swelling in the neck, of an inability to open his mouth and of difficulty in swallowing. Some swelling of the neck and tenderness in the left sublingual region had developed about eight days prior to the examination. The swelling had progressed rapidly.

There was edema and swelling of the floor of the mouth and of the anterior part of the neck. The tongue was slightly elevated. There was no fluctuation, but the swelling was firm and tender. There was no clinical evidence of laryngeal edema or obstruction. Periodontal disease involved the lower teeth; the lower anterior teeth were loose and carious. The patient's temperature was 102.8° F. and blood pressure was 150/80.

The urinalysis was as follows: yellow, cloudy, acid, specific gravity, 1.024, occasional white blood cells, amorphous urates. Blood morphology was as follows: red blood count, 4,800,000; white blood count, 11,450; hemoglobin 94 per cent or 15.2 Gm.; 58 neutrophil leukocytes, 40 lymphocytes, 2 monocytes; sedimentation rate, 53 mm. in three quarters of an hour. There were occasional reticulum lymphocytes, which suggested virus infection.

Periapical intraoral roentgenograms showed chronic periodontosis and a periapical breakdown of the lower left lateral and central incisors. The patient was admitted to the hospital on May 12, 1953, and received the following therapy: (1) 10 per cent glucose in saline, intravenously, immediately; (2) penicillin (plain), 25,000 units, every four hours; (3) penicillin S-R, once daily, started immediately; (4) secobarbital (Seconal), ½ grain, for sleep, as required; (5) streptomycin, 250 mg. immediately, repeated every four hours; (6) high calory liquid diet, (7) continuous hot moist packs to the anterior portion of the neck and sublingual region.

On the second day, May 13, there was fluctuation in the sublingual region, extending under the chin. The temperature had dropped to 101° F. Drainage, that voided approximately 3 cc. of purulent exudate, was established through a longitudinal blunt separation of the anterior neck muscles. A Penrose drain was inserted. Hot compresses and antibiotics were continued. On May 14, the patient was much improved. His temperature was 99.6° F. Hot packs, glucose in saline solution and streptomycin were discontinued. He was able to open his mouth more freely.

On May 16, his temperature was down to 99° F., and progress was satisfactory. The Penrose drain was removed, and plain penicillin was discontinued. On May 18, his temperature was 98.6° F. There was no edema evident, and the patient felt well. On May 19, all of his remaining teeth were extracted. On May 22, the penicillin S-R was discontinued, and on May 23, the patient was discharged from the hospital.

The neck infection in this instance resulted from a deep periodontal infection of the lower anterior teeth which extended lingually and beneath the mylohyoid structure into the sublingual space. Timely treatment of the patient with antibiotics prevented what could have been a serious deep neck infection.

925 Lowry Building

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Editorials

Organized dental service programs

This month THE JOURNAL devotes a major portion of its pages to a subject of growing concern to the profession—organized programs for the improvement of the dental health of the public.

Almost a half century has elapsed since the Association first recommended that public dental programs be made one of the basic services of state departments of health. More than a third of a century has elapsed since the first of the more progressive public health officers accepted that concept. Twenty years have elapsed since the inauguration of the National Social Security Act—a measure which immediately increased interest in dental health and hastened the acceptance of dentistry in the public health field. Today all but one of the states in the Union and all of the nation's territories and dependencies include dentistry among the public health services. The effect of these agencies working in cooperation with the state dental societies has contributed greatly to a better appreciation by the public of good dental health, which in turn has influenced the development of programs designed to extend dental service to larger segments of the population.

Other factors which have stimulated the development of dental service programs include the acceptance by the public of credit financing, group purchasing and dental fringe benefits in labor union contracts. Singly or combined, these factors have influenced the establishment of public welfare assistance programs, "Medicare" programs, VA dental programs and union-management health and welfare programs.

The desirability of each of these programs is not questioned here; but the duplication of effort, the confusion, misunderstanding and friction frequently caused by the unorganized and unrelated operation of these programs are subjects for discussion.

The dental profession has demonstrated its willingness and its ability to cooperate in the development of programs for the better distribution of dental health care.

The Veterans Administration dental program, the program of the International Longshoremen's and Warehousemen's Union-Pacific Maritime Association on the West Coast and the number of practical and satisfactory public welfare assistance programs attest to that fact. What is needed now is a re-evaluation of existing programs by state dental societies with the object of developing a basic dental service operational pattern within which all group service programs can function, thereby eliminating overlapping of services and sharp differences in policies and procedures.

The establishment of a basic pattern would enable dental societies to forego the necessity of starting from scratch each time a new dental service program is initiated and of having to develop a custom-built program for each new group of recipients. As Secretary Hillenbrand points out on page 164 of this issue, in discussing dentistry's responsibility in the socioeconomic pattern, "the responsibility of the dental society remains the same; socioeconomic trends change with time." In order to meet those constantly changing trends, the state dental society might well conduct a continuing study program of the socioeconomic problems in the state as they relate to dentistry, so that the society can be a source of information to which others may turn for aid in resolving problems associated with the production and distribution of dental health care. A study of this kind, including a study of available manpower, facilities and costs, would not only provide the society with information on which to base its intramural as well as its extramural educational actions, but it would provide data with which to assist other groups in designing the most practical dental service program within the limits of their budgets.

Growth of population outdistances increase in dentists

The nation's rapidly expanding birth rate—the boom in babies—referred to recently in the public press as an "explosion" in population, promises to confront the profession with a real problem: the problem of maintaining, or improving if possible, the present ratio of dentists to population which is now about 1:1,900. According to the latest reports of the Bureau of Economic Research and Statistics,[1] the year ending in mid-1957 will see a net increase in active dentists of about 1,165 whereas the Bureau estimates 1,485 new dentists are needed to maintain the current population-dentist ratio. Despite the increase in the number of dental schools and despite the enlarged facilities of existing schools, the national shortage will become more pronounced with each passing year and it will become particularly acute in the areas of fastest growth.

The Bureau's observations are buttressed by the recent survey of the dental situation in the eleven Western states[2] conducted by the division of dental resources of the U.S. Public Health Service. This survey reveals that about 35,000 dentists will be needed in the Western states by 1975 to meet the demands for care expected by that time, but that only about 16,000 dentists will be available. If the projections of the U.S. Public Health Service are correct, the next twenty years will see a shortage of nearly 20,000 dentists and 4,000 dental hygienists in that region alone. The states surveyed were Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington and Wyoming.

In the past four years the population of the United States increased by nearly eleven million people, with the West outpacing the rest of the nation by far in rate of growth. The West, according to the survey, probably will have to rely almost exclusively on expanding facilities within the region if the anticipated dental deficit is to be met, since the growing shortage of dentists is a nation-wide phenomenon, and other parts of the country will be hard pressed to train sufficient dentists to meet their own needs. Western dental schools, it is estimated, must graduate 1,600 dentists a year between 1960 and 1975 to meet the Western region's needs, whereas currently the region graduates 400 dentists annually. To meet the anticipated deficit will require that an additional 1,260 students be graduated each year between 1960 and 1975.

The projections of the two surveys confront the profession with sobering responsibilities. How adequately and promptly these responsibilities are met is going to have a bearing on other problems now confronting the profession.

1. Bureau of Economic Research and Statistics. The 1956 survey of dental practice. I. Introduction. J.A.D.A. 53:584 Nov. 1956.
2. News of dentistry. Survey predicts shortage of dentists in 11 states. J.A.D.A. 53:629 Nov. 1956.

Dentists enter government pension program

This year more than seventy-nine thousand dentists feel the initial effects of being enrolled in the nation's Social Security system. Those who favored the inclusion of dentistry in the Old Age and Survivors' Insurance program will pay this year's premium with no hesitation. Those who opposed will find the added tax distasteful.

It is too early to predict the amount of benefit which the average practitioner will derive from the program. It is not too early, however, to predict that the present provisions of the program will meet with many changes during the lifetime of many dentists. Such a prediction can be made with safety because of the number of revisions written into the act since its inception twenty years ago.

Originally only employed persons were covered and annual premiums amounted to one per cent of the first $3,000 of earnings. For this thirty dollars a year the worker was assured a maximum old age benefit of forty dollars a month. Since 1937 the premiums, benefits and coverage of the program have been extended so that today's system has departed considerably from its original concept as a compulsory annuity. Annual premium for employees has been raised to two and one quarter per cent on the first $4,200 of earnings, and will continue to rise to four and one quarter per cent by 1975 with an equal amount being contributed by management. Coverage has been extended to the self-employed, including dentists, who currently pay three per cent on the first $4,200 of net income. This tax, under present provisions of the law, will be increased to six and three-eighths per cent by 1975. Benefits have been increased to one hundred eight dollars and fifty cents a month, and provisions have been made for payment under certain conditions to survivors and dependents.

It is obvious that the public has become so sold on O.A.S.I. that there is little likelihood that it ever will be discontinued. Despite frequent criticism that it is actuarially unsound, it has become part of the American way of life, a government pension program to which somewhat more than 79,000 dentists will contribute annually a premium amounting to upwards of ten million dollars.

International Correspondence

NEWS FROM GREAT BRITAIN

As a result of the present state of foreign affairs, the council of the British Dental Association considered how best to ensure continuation of the activities of the Association in the event of a national emergency. The representative board approved recommendations including the setting up of a war council to conduct the affairs of the Association in such an emergency.

Among other current activities of the Association is collaboration with the government in creating a national register of dental manpower. To this end, all members of the profession with a registered address in England, Scotland and Wales or the Isle of Man have been asked to complete a questionnaire.

The advent of gasoline rationing has provided difficulties for the profession, but the Ministry of Health has arranged for a supplementary supply for dentists.

NATIONAL HEALTH SERVICE

The gross expenditure for the National Health Service for England and Wales during the current year is estimated at £515,225,225.

The principal school medical officer of the Isle of Man, Dr. Cullen, introducing his annual report for 1955, devotes several paragraphs to the school dental problem in general and the prevention aspects of dental prophylaxis in particular. Dr. Cullen draws attention to the principal school dental officer's report dealing with fluoridation in other countries, particularly in the United States. He concludes that the adoption of fluoridation on the Island would begin to relieve the pressure on the school dental services in about five years' time. Dr. Cullen is to be commended for his emphasis of the problem. Analysis of the Manx water supplies shows no known fluoride content, and the insular limitations of the Island would lend themselvés admirably to the establishment of a fluoridation project.

Her Majesty's Stationery Office has published a report to advise on anesthetic explosion hazards and precautions. Included are the histories of 36 explosions occurring between the middle of 1947 and the middle of 1954. It appears that in nearly every explosion there was some avoidable factor against which precautions could have been taken. A lack of consciousness of the danger seems to have been one of the chief problems. Static sparks probably caused most of the explosions.

A special section deals with the risks in dental departments. The use of cyclopropane and vinyl ether in dental operations has become increasingly popular, and both these agents are highly explosive. Possible sources of ignition are sparks from electric motors or dental engines and suction pumps, and switches of speed regulators and small lighting appliances. Obvious hazards such as flames from gas burners may easily be overlooked. There is, however, also the risk from frictional heat from burring and the risk of sparks when forceps fracture the enamel of a tooth. The probability of ignition depends on the oxygen content of the mixture, and if this is diluted with nitrogen so that the oxygen is not above 25 per cent, the hazard is eliminated.

The report concludes by reiterating the need for greater awareness of the danger and points out that until this is engendered there is little to be gained by refinements in technic. One appendix gives a draft for a warning notice, and another sets out a safety code for equipment and installations.

ROYAL COLLEGE OF SURGEONS

The announcement that Kenneth Adamson, president of the Australian Dental Association, and Harold Hillenbrand, secretary of the American Dental Association, have been elected to the Fellowship in Dental Surgery of the College has given the greatest pleasure to their many friends. This is a signal honor which recognizes the great contribution both these colleagues have made to the advancement of the science and practice of dentistry.

Prof. A. E. W. Miles, honorary curator of the odontological museum of the College is to be congratulated on being awarded the John Tomes prize for original and other scientific work concerned with dentistry.

ITEMS OF INTEREST

One hundred years ago, in November 1856, the Odontological Society of London was formed, the first professional organization of dentistry in England. In 1907, it joined with 14 other medical societies to form the Royal

Society of Medicine, of which it became the section of odontology. The first general meeting of the Odontological Society was held on January 5, 1857, and the event was celebrated on January 4, 1957, with a most successful centenary dinner held at the Royal College of Surgeons and presided over by the president of the section, James Wright.

The British Society of Periodontology, a most active specialist group, held an interesting meeting in November at which a symposium on instruments was presented by Mr. W. G. Cross, Mr. R. D. Emslie and Mr. A. B. Wade.

The American Dental Society of London held its monthly dinner and meeting at the College of Surgeons, when a symposium was presented by Mr. A. C. R. Macleod, Mr. S. Cripps, Mr. J. W. Cunningham and Prof. R. W. Lovel on the contact point.

Despite the international situation, nothing is being allowed to interfere with the plans of many hundreds of dentists and their families in Great Britain to attend the Twelfth International Dental Congress in Rome September 7-14.

G. H. Leatherman,
D.M.D., F.D.S., R.C.S., F.A.C.D.

NEWS FROM THE REPUBLIC OF ARGENTINA

The dean of the College of Dentistry of the University of Buenos Aires, in accordance with a directive issued by the advisory commission of the College, has established entrance regulations for the schools.

December 15 was the deadline for registration in the preparatory course, a program obligatory for all who wish to enter the dental school. Students who, for some extraordinary reason, cannot take this course may take an entrance examination on March 15. They must present to the dean in writing the reasons for nonenrollment in the preparatory course. The deadline for submission of such information is February 1.

The preparatory course is being given during February and March.

Students wishing to enter the dental school must have a degree attesting to secondary education in the country. A bachelor's degree is required of students from foreign countries where reciprocal educational agreements exist. Students from other national universities offering proof of completion of courses corresponding to those of the first two years of this College will be admitted without examinations.

With the issuance of the new entrance requirements, all previous regulations are void.

Ricardo Augusto Crespi,
correspondent from Buenos Aires

Association Affairs

NADL TO CONFER WITH ADA ON CERTIFICATION PROGRAM

The National Association of Dental Laboratories has accepted an invitation of the American Dental Association to confer on a program of certification for dental laboratory technicians. The conference will be held February 3 in Chicago and will discuss a tentative program drawn up by the dental association's Council on Dental Education.

In the December 26 invitation to NADL, Harold Hillenbrand, Association secretary, stated, "While this proposal of the Council has yet to be considered by the Board of Trustees and the House of Delegates of this Association, I believe that it will serve effectively as a basis for discussion between us." The dental executive also suggested that the meeting might provide opportunity for discussion of "those issues relating to the accreditation of dental laboratories."

NADL, at its October convention, voted to delay its own certification plan pending discussion with A.D.A.

FTC HEARING ON LAB RULES SET FOR CHICAGO FEBRUARY 4

The Federal Trade Commission on February 4 will hold a public hearing on the American Dental Association's request for changes in the *Trade Practice Rules for the Commercial Dental Laboratory Industry*. The hearing will open at 10 A.M. at the Hotel Knickerbocker in Chicago.

An announcement by the Commission said that the hearing would consider (1) "the need for amendment" of the Commission's definition of the commercial dental laboratory industry; (2) whether the terms "design" and "occlusion" should be deleted from the *Rules* and (3) whether the sections should be eliminated from the *Rules* that deal with advertising and promotional allowances, with discriminatory services and facilities and with exclusive deals.

FTC rejected the Association's request for an expanded discussion of the relationship between the commercial dental laboratories and the dental profession. It said, "With respect to consideration of changes in the definition of the industry, the Commission states that such should be confined to the question of need for amendment of the present definition in order adequately to inform as to the applicability of the *Rules*, and that this can be satisfactorily accomplished without identifying the relationship of the commercial dental laboratories to the dental profession."

Association representatives at the hearing will be Harry Lyons, Association president; Walter E. Dundon, chairman, Council on Dental Trade and Laboratory Relations; Raymond J. Nagle, dean, College of Dentistry, New York University; J. Eugene Ziegler, director, School for Dental Laboratory Technicians, University Extension Dental Program, University of California in Los Angeles; John R. Thompson, chairman, department of orthodontics, Northwestern University Dental School, and Renah Camalier of Washington, D. C., special Association counsel.

Additionally, two consultants will be present, Clyde H. Schuyler of New York City and F. R. Aldrich of Columbus, Ohio. Accompanying the group will be

Bernard J. Beazley, secretary, Association Council on Federal Dental Services, and Bernard J. Conway, secretary, Council on Legislation.

MEDICARE DENTAL FEES TO BE NEGOTIATED WITH SOCIETIES

In line with the request of the American Dental Association, the Department of Defense will soon begin negotiations with state dental societies on fee schedules for dental work performed under the Department's program of health care for military dependents.

Aspects of the program were discussed with the American Dental Association's Councils on Legislation and Federal Dental Services January 7 in Chicago by Lt. Col. R. W. Hobson, newly appointed to the Office of Dependents' Medical Care to handle the dental aspects of Medicare. So far, the Defense Department has negotiated contracts solely with state medical societies.

Dentists treating patients are advised to send their statements to the fiscal agent designated by the Defense Department for the state. As a temporary expedient, Veterans Administration fee schedules are being used. The program applies only to patients in civilian hospitals, and dental treatment is limited largely to certain oral surgery procedures. Questions on the program may be sent to the American Dental Association's Council on Federal Dental Services at the Central Office in Chicago.

LEGISLATION COUNCIL MEETS AS 85th CONGRESS CONVENES

Health will be a popular matter for legislation again this year judging from the number of bills introduced on the subject at the opening of the 85th Congress. Of the 2,000 bills submitted in the first two days, some 70 were considered of interest to health organizations. Additionally, record sums for health were proposed in the President's budget message January 16. As the new Congress got under way, the American Dental Association's Council on Legislation met in Chicago to consider those proposals affecting dentistry.

Jenkins-Keogh • Already introduced into Congress are the Jenkins-Keogh bills, H.R. 9 and 10. These measures, supported by the Association, would aid self-employed persons in establishing retirement plans. Floyd W. Pillars, vice-chairman of the Council on Legislation, and Howard Greenblatt, Council assistant secretary, represented dentistry at a January 23 meeting in Washington, D.C., sponsored by the American Bar Association to which representatives of some 200 organizations for the self-employed were invited. Meanwhile, the Council alerted state and component societies to the importance of contacting Congressmen for support of the measures.

Dental Research • The proposed budget for fiscal 1958, which begins July 1, for the Department of Health, Education and Welfare tops the three billion dollar mark for the first time. It contains a record $6,430,000 for dental health activities, an increase of $404,000 over fiscal 1957. The increase, which was recommended for the National Institute of Dental Research, was exceeded by only two of the seven National Institutes of Health, that for arthritis and metabolic diseases and for allergy and infectious diseases.

Contained within the NIDR budget is a proposed appropriation for extramural research projects of $2,825,000, an increase over fiscal 1957 of $125,000. Research fellowships and training grants receive $500,000 each, the same amounts as last year. The proposed appropriation for research carried on within the National Institute for Dental Research is $1,184,000, an increase of $149,000.

Not included in the budget is an appropriation for a building for the National Institute of Dental Research. It is reported that in last minute attempts to reduce money demands of federal agencies, the President struck from the budget appropriations for nearly all new government buildings which were in the planning stage.

The Council on Legislation will support increased funds for dental research again this year. Latest information indicates that about 250 applications for funds totaling slightly over three million dollars will be reviewed by the National Advisory Dental Research Council at its March meeting. As of October, the Council had approved 144 grants of nearly $1,278,000. Thus, the additional 250 requests to be considered in March exceed funds available by nearly 1.5 million dollars. Even if a considerable number of askings are not approved, as is expected, it is considered likely that current funds will be inadequate.

The legislation council also will press for appropriation of the $3,700,000 for the NIDR building which was authorized by Congress in 1956.

School Construction • Other dental items in the President's budget include $15,200,000 in federal matching funds as a starter sum for construction of teaching facilities at medical and dental schools, a part of new legislation recommended by the President, and 30 million dollars for construction of health research facilities, the second installment on a 90 million dollar program voted by Congress last year.

Doctor Draft • The six year old doctor draft act expires June 30. The Department of Defense has indicated that it will not press for an extension of the act but will ask for an amendment to the regular draft to provide for the selective callup of doctors who have basic military liability. This plan appears to be identical with recommendations made by the Association to Congress in 1955. According to Lt. Col. R. W. Hobson of the Department of Defense, the improved ability of the Armed Forces to fill their needs without the special draft is in part a result of the career incentive program urged by the Association.

RELIEF FUND OVER THE TOP; BREAKS ALL EARLIER RECORDS

The $100,000 Golden Anniversary campaign of the American Dental Association reached $100,260.93 January 21, the fastest completion record in its history. The goal was reached a full month ahead of last year. Receipt of the final dollars needed to make quota followed a second appeal mailed a few weeks earlier by H. R. Bleier, chairman of the Council on Relief. In his letter, Dr. Bleier urged those societies who had not yet met their quota to go "over the top."

As of January 10, the last date for which a breakdown was available, 29 state societies and the U.S. Public Health Service had met their quota.

ASSOCIATION MEMBERSHIP PASSES 86,000 AT YEAR'S END

Membership in the American Dental Association reached 86,872 December 31, the highest mark in the organization's history. It exceeded last year's total, also a record, by 2,021.

All major categories of membership increased. Active members numbered 73,022, an increase of 1,691 over the previous year. There were 3,860 life members as against 3,633 the year before. Student membership reached 9,755. It was 9,637 in 1955.

State societies with the largest membership were: New York (10,902), Pennsylvania (4,883), Illinois (4,845), Southern California (3,661), Ohio (3,607) and Michigan (3,071).

Societies registering the largest numer-

ical increases were: Southern California (147), Michigan (146), California (132) and New York (118). In all, 49 state societies and federal dental services showed an increase, eight a decrease and two remained the same.

A year-end tally of membership in the federal dental services revealed a 6.8 per cent drop in the proportion of dentists who belong to the Association. The number of dentists on duty climbed from 6,859 in 1955 to 7,061 in 1956, while Association membership declined from 5,177 to 4,848.

MARCH 31 IS DEADLINE FOR PAYMENT OF MEMBERSHIP DUES

Association members were reminded this month that the deadline for payment of membership dues is March 31. Louis M. Cruttenden, Association assistant secretary, pointed out that if a member is not in good standing his right to participate in the group insurance programs of the Association is jeopardized. Additionally, the delinquent member no longer receives his copy of THE JOURNAL, Dr. Cruttenden said.

DENTAL OFFICIAL STRESSES VALUE OF ACTIVE MEMBERSHIP

Practicing dentists who plan to return to full-time study and are considering applying for student membership status in the Association have been urged to consider the benefits of active membership. Louis M. Cruttenden, Association assistant secretary, has pointed out that accident and health insurance sponsored by the Association and by state societies as well as malpractice and liability insurance are available only to active members. Insurance companies will not issue these policies to students, Dr. Cruttenden said. The Association's life insurance policy, however, is available to student members.

Under a policy approved by the House of Delegates last October, students engaged in full-time graduate training of at least one year are eligible for student membership and may pay the lower student dues.

X-RAY DIAGNOSIS HARMLESS TO PATIENT, COUNCIL ADVISES

"There is no scientific evidence that the routine use of modern x-ray equipment for dental diagnostic purposes will be harmful to the patient," the Council on Dental Research said in a formal statement released in January.

The statement was prepared in response to inquiries stimulated by recent assertions of some writers and commentators that diagnostic dental roentgenographic examination may be harmful to patients. The statement follows:

> X-ray examinations are essential in the diagnosis of dental disease. The elimination of such examinations would hamper adequate diagnosis and impair proper treatment.
>
> Many million x-ray examinations have been made annually by dentists without a report of injury to the patient. There is no scientific evidence that the routine use of modern x-ray equipment for dental diagnostic purposes will be harmful to the patient.
>
> The American Dental Association recommends that all steps be taken to reduce as effectively as possible the amount of patient exposure to radiation by the use of modern equipment such as a long cone, a filter and fast film.
>
> In view of available scientific reports, the Council on Dental Research of the American Dental Association believes there is no justification for concern by patients undergoing routine x-ray examinations for dental diagnosis.

FORMER RESEARCH FELLOW AIDS ON RADIATION BOOKLET

Robert J. Nelsen of Rockville, Md., a former American Dental Association research Fellow at the National Bureau of Standards, has been reappointed representative of the Association to the main committee of the National Committee on

Radiation Protection, Harold Hillenbrand, Association secretary, announced in mid-January. The committee is sponsored by the Bureau of Standards.

In his post, Dr. Nelsen will assist in revision of Handbook 59, *Permissible Dose from External Sources of Ionizing Radiation,* being prepared by the main committee. Additionally, he has been asked to cooperate in production of a new pamphlet on radiation hazards being sponsored by the American College of Radiology.

HARRY LYONS TO PRESIDE AT NATIONAL HEALTH LUNCHEON

Harry Lyons, Association president, will preside at a luncheon meeting during the 1957 National Health Forum in Cincinnati March 20-22. Guest speaker at the luncheon is G. Mennen Williams, governor of Michigan. Theme of the 1957 Forum is mental health. The American Dental Association is a member of the National Health Council, sponsor of the event.

DISMISS LIBEL CHARGES AGAINST FIVE A.D.A. OFFICIALS

Libel charges against five of seven Association officials named in the $100,000 lawsuit of Robert J. H. Mick, antifluoridationist of Laurel Springs, N.J., were dismissed December 13 by the Superior Court of New Jersey, Camden County. Dr. Mick's suit claimed that some statements by Association officials and articles in Association publications relating to fluoridation contained "false and libelous statements" regarding him.

Dismissed as defendants in the suit were Bernerd C. Kingsbury, immediate past president; Harry Lyons, president; Harold Hillenbrand, secretary, and H. Trendley Dean, secretary of the Council on Dental Research. The Court ruled that the complaint failed to state a claim against these defendants. J. Roy Doty, secretary of the Council on Dental Therapeutics, was dismissed also on the grounds that he was not served with a summons relating to the suit.

Remaining as defendants are the Association, Lon W. Morrey, editor, and Herbert B. Bain, director, Bureau of Public Information. No date has been set for the trial.

SURVEY OF DENTISTRY TO START THIS SPRING

The two year survey of dentistry, to be conducted by the American Council on Education, will begin this spring, announces Arthur S. Adams, Council president. The study, which will cover dental education, research, practice and dental health, is being undertaken at the request of the American Dental Association. It will attempt to "assess the achievements, resources and potentialities of dentistry in the United States, to determine desirable areas of future development, and to recommend methods for the better provision of an essential service to the American people."

The project is to be financed by the following grants: Kellogg Foundation, $250,000; American Dental Association, $120,000; Rockefeller Brothers Fund, $25,000, and the Louis W. and Maud Hill Family Foundation, $5,000.

Comprising the national commission responsible for administration of the survey will be representatives of such groups as education, management, labor, medicine and dentistry.

EDITORS TO ANALYZE GOOD AND BAD OF PUBLICATIONS

Dental editors from across the nation will submit their publications to the critical scrutiny of experts in editing and layout at the Journalism Conference February 25 and 26 in the Association's Central Office. The Conference is sponsored by

the Council on Journalism and the American Association of Dental Editors.

In addition to the publications clinic, the program includes demonstrations of machines used in the publishing field, such as binding, Mimeograph and photo offset equipment.

Also scheduled are essays on medical writing; production problems such as mailing, contracts with printers and advertising; library extension services; preparation of bibliographies, and the publication of undergraduate journals.

Among essayists are Harold Hillenbrand, Association secretary; Herbert Bain, director, Bureau of Public Information; Donald Washburn, director, Bureau of Library and Indexing Service, and J. C. A. Harding, chairman, Council on Journalism.

Other speakers are Morris J. Wilson, editor, Kentucky State Dental Association; Leon Snow, executive secretary, Michigan State Dental Association, and J. P. Gray, M.D., of Detroit.

APRIL CONFERENCE TO STUDY THREE HEALTH CARE PROBLEMS

Three problems associated with the distribution of dental health care will be studied at the Eighth National Dental Health Conference to be held in Chicago April 22-24. The conference is sponsored by the Council on Dental Health.

Jay H. Eshleman of Philadelphia, Council chairman, announced that conferees would consider (1) determination of the costs of dental health care in group purchase programs, (2) operation of dental society budget payment plans for dental health care and (3) conduct of joint surveys by dental societies and public health departments to determine the dental needs and dental manpower resources of their respective communities.

In announcing the subjects for the 1957 conference, Dr. Eshleman pointed out that a continuing study of costs of dental health care and of dental manpower resources is needed to provide up-to-date information when a group purchase program is proposed. "Current plans for which information is needed include the Medicare program, proposed legislation for health and welfare benefits for federal employees and the federal program of matching grants for medical care under public assistance programs which becomes effective July 1," he said.

HOSPITAL DENTAL SERVICE INSTITUTE SET FOR JUNE

The first institute on hospital dental service to be sponsored by the American Dental Association in cooperation with the American Hospital Association will be held June 17-19 in the Willard Hotel, Washington, D. C., announces Frank B. Hower, chairman of the Council on Hospital Dental Service.

The Institute is designed to explore various aspects of hospital dental service, Dr. Hower states, and no recommendations of policy will be made. The Institute is open to hospital administrators, chiefs of dental services, dentists on hospital dental staffs and physicians. Registration is $45 and may be paid to the Institute office of the American Hospital Association, 18 E. Division St., Chicago.

The first day and a half of the three day meeting will be devoted to presentations of the present policies on accreditation and approval of hospital services and dental education programs by such agencies as the American Dental Association, American Hospital Association and the Joint Commission on Accreditation of Hospitals. The rest of the conference will be a workshop on the relationship of dental activities to other hospital services.

DENTISTS URGED TO AID HUNGARIAN RELIEF FUND

Harry Lyons, president of the American Dental Association, has issued an appeal to all dentists to support the American

National Red Cross disaster fund for Hungarian relief.

The Red Cross has launched a drive to raise five million dollars for food, clothing and medical supplies to meet the emergency needs of the Hungarian people and Hungarian refugees in other countries. In his statement, Dr. Lyons commended the speed with which Red Cross agencies acted to provide the essentials of life to the Hungarian people.

1956 SCHOOL ENROLLMENT UP; CONTINUES RECENT TREND

Enrollment in the nation's dental schools continued the upward trend of recent years with 15,534 students registered October 15. Enrollment was 266 over the same date in 1955.

The figures were published in the *Dental Students' Register,* released this month by the Council on Dental Education of the American Dental Association.

Of the total registered for school, 13,004 were undergraduates, an increase of 274 over the previous year. The increase is attributable to the opening of two new dental schools and to expanded facilities in established schools. Fairleigh Dickinson College and Seton Hall accepted their first freshmen this year.

The *Register* lists a total of 3,561 freshman students. Last year's graduates were 3,038. New York and California continued to supply the greatest number of students, 1,474 and 1,118 respectively.

Enrollment in dental hygiene schools also increased. There were 2,104 students registered for the current term as compared with 2,009 the year before.

For the first time, the *Register* contains figures for the five Canadian dental schools. Total enrollment was 847; undergraduates were 791 and freshmen students, 306. Canadian schools graduated 165 dentists last year.

Subscripts • The 1957 edition of the *American Dental Directory* is available for $7.50 from the Order Department at the Central Office. The *Directory* lists dentists alphabetically and geographically and contains information on licensure requirements, lists dental schools, state and national dental organizations. . . . Miss Helaine Levin, Association Film Librarian, has been elected to the board of directors of the Film Council of America. The A.D.A., A.M.A. and other national health and education organizations are Council members.

Dental Societies

COLOR TV PART OF PROGRAM AT PHILADELPHIA MEETING

Eight hours of closed circuit color television will be a high light of the Greater Philadelphia Annual Meeting March 26-29. The meeting is scheduled for the new Sheraton Hotel which opens in January. Also on the program are registered clinics, a medical symposium and a public health program which will open a work conference on administration of dental programs in hospitals. Albert L. Borish, general chairman, and John C. Piscator, chairman of the society's governing committee, will direct the sessions.

VARIETY OF SUBJECTS PICKED FOR CLEVELAND MARCH COURSE

Medical progress and its relationship to dentistry is the subject of a two day course to be presented March 13 and 14 at the Frank E. Bunts Educational Institute in Cleveland under the sponsorship

of the Cleveland Dental Society. Among the topics to be discussed are the relationship of ocular manifestations to dental infection, the dentist's health, the value of hypnosis, dermatological lesions of the face and the year in dental research.

Registration for the course may be addressed to the Registrar, Frank E. Bunts Educational Institute, 2020 E. 93rd St., Cleveland 6.

TEN STUDY COURSES TO BE PART OF WISCONSIN MEETING

Ten study courses have been arranged in addition to essays, table clinics and motion pictures on the program of the Wisconsin State Dental Society meeting April 29 to May 1 in Milwaukee.

Among the out-of-state essayists will be Frederick S. McKay of Colorado Springs, Colo.; Erwin M. Schaffer of Minneapolis; George C. Paffenbarger of Washington, D. C.; Glenn A. Thomas of Wichita, Kan.; Alfred E. Seyler of Detroit; John Kuratli of Portland, Ore.; Bernard Jankelson of Seattle and Gerard J. Casey of Chicago.

Wisconsin essayists include Robert J. Samp, M.D., Rudolph P. Gingrass, Robert H. Brah, C. M. Wilcox, R. T. Lang, H. O. Hoppe and E. J. Surwillo.

OREGON DENTAL HISTORY PUBLISHED BY STATE SOCIETY

The *History of Dentistry in Oregon,* by W. Claude Adams, describing the development of the profession from its pioneer days in the state to the present, has been published. The author, an Oregon dentist for over 50 years, has described the development of dental legislation and education, the beginnings of society organization and the development of official publications. Additionally, he has included sketches of outstanding men in the profession. The material is documented and illustrated.

History of Dentistry in Oregon is available from the Oregon State Dental Association, 304 Selling Bldg., Portland 5. Its price is $7.50.

SOCIETY COMMENDED FOR ADMITTING NEGRO MEMBERS

The recent action of the District of Columbia Dental Society in erasing its color bar to membership was commended in an editorial January 10 in the *Washington Post and Times Herald.*

"The Society will profit in many ways from its welcome action," the *Post* stated. "By admitting qualified Negro dentists, the Society will stimulate fruitful new professional contacts and—most important— will enhance its prestige as it comes closer to representing the whole dental profession. . . . Like the rest of the country, professional people are acquiring a growing conviction that racial prejudice is bad for the individual, bad for business—and bad for America."

GROWING CALIFORNIA SOCIETY BUYS BUILDING

The purchase of a three story, reinforced concrete building in downtown San Francisco to provide additional space for the California State Dental Association, was announced in December by president Browning O. Chartrand.

Cost of the building, at 518 Sutter St., was $125,000. The society plans to spend upwards of $25,000 for modernization, Dr. Chartrand stated. It will be about a year before the Association can move into its new headquarters. In the last 15 years, Association membership has more than doubled, and its activities have grown at an even faster rate, the society president said.

SUBSCRIPTS • The Minnesota State Dental Association moved into its new building at 2236 Marshall Ave., St. Paul, De-

cember 27. Details on the new headquarters will be published later. . . . More than 15,000 persons attended the December 3-7 Greater New York Dental Meeting. Included in the total were dentists from 24 foreign countries.

Dental Education

SUPPLY HOUSE GIVES SCHOOLS $7,800 FOR GRADUATE STUDY

A total of $7,800 for fellowships in graduate study or research has been awarded 13 dental schools by the M. F. Patterson Dental Supply Co. of Minneapolis. The gifts, $600 to each school, were announced at Christmas by the firm's president, W. O. Patterson. The Patterson-Hettinger-Cary Fellowships, as the grants are called, went to the following schools:

College of Dentistry, State University of Iowa; School of Dentistry, Loyola University (New Orleans); School of Dentistry, University of Minnesota; School of Dentistry, Marquette University; School of Dentistry, University of Kansas City; School of Dentistry, Creighton University; College of Dentistry, University of Nebraska; The Dental School, University of Oregon; School of Dentistry, Meharry Medical College; College of Dentistry, University of Tennessee; College of Dentistry, Baylor University; School of Dentistry, University of Texas, and School of Dentistry, University of Washington.

ADVANCED STUDY FELLOWSHIPS AVAILABLE AT ROCHESTER

Fellowships for dental graduates interested in research and advanced study are available at the University of Rochester School of Medicine and Dentistry. Accepted candidates may prepare for the M.S. or Ph.D. degrees in the basic sciences relating to dentistry, for the M.S. degree in dental science or may conduct research as research associates.

Stipends range from $3,000 to $5,000 a year. Additionally, appointments are available to candidates who qualify for U.S. Public Health Service Postdoctoral Fellowships. The fellowships have been made possible through a training grant from the USPHS and through industrial grants added to funds supplied by the University.

NEW YORK STATE TO AWARD 28 DENTAL SCHOLARSHIPS

The State of New York has announced the availability of 28 preprofessional dental scholarships for study in approved dental schools in New York. The scholarships, examinations for which will be held next June, carry a stipend of $750 a year for four years. Complete information may be obtained from any of New York's preprofessional colleges or from the Bureau of Examinations and Testing, State Education Department in Albany.

COURT UPHOLDS ILLINOIS SCHOOL ON DENTIFRICE

The United States Court of Appeals January 16 upheld the University of Illinois Foundation in its claim that a dentifrice patent assigned to it had been infringed upon. The patent had been assigned to the Foundation by Edward C. Wach, a retired University of Illinois professor, and Robert G. Kesel, professor of dentistry, at the school.

Defendants in the suit are Block Drug Co., Amm-i-dent, Inc., and the F. W. Woolworth Co. The suit was based on the sale of a tooth paste under the trade name "Amm-i-dent." During the course of the suit, it was disclosed that the defendants have manufactured and sold some $28,000,000 worth of the patent dentifrice in question.

Amount of damages to be awarded the Foundation will be decided by a district court.

THREE GROUPS AID STUDY OF NEW MEXICO DENTAL MANPOWER

A study to determine the dental manpower needs of New Mexico as they now are and as they project to 1975 is being conducted by the Bureau of Business Research of the University of New Mexico. The study, recommended and financed by the state dental society, will be printed and distributed by the New Mexico Department of Public Health.

Decision to undertake the survey of New Mexico's needs followed study of the recent report of the Western Interstate Commission for Higher Education which analyzed dental manpower requirements in 11 western states.

CALIFORNIA ORAL SURGERY INTERNSHIP BEGINS JULY 1

A one year internship in oral surgery begins July 1 at the San Francisco Hospital. Applications and information on the training program are now available from Melvin J. Sherman, division of oral surgery, School of Dentistry, University of California Medical Center, San Francisco 22.

OPERATION ON TV PREVIEWS FUTURE CHAPEL HILL PROGRAM

Some 350 dentists watched dental operations on closed circuit television at the School of Dentistry, University of North Carolina, Chapel Hill, December 5 during the school's homecoming day and postgraduate dental seminar. The television program was a preview of what will be an integral part of the regular teaching program with the installation, soon to be completed, of the school's own television equipment.

The TV equipment has been obtained with the help of the Dental Foundation of North Carolina, Inc., an agency to raise funds for education and research. The Foundation already has made possible installation of a humidity and temperature control system in the dental school's research laboratory and has made loans to students.

John W. Gallagher, professor of oral pathology and periodontology, University of North Carolina, School of Dentistry, performs an operation before the TV camera at the school's postgraduate dental clinic. Some 350 dentists viewed the telecast.

The December 5 program was telecast to six classrooms and laboratories. Operations were performed by faculty members John W. Gallagher, Marvin E. Chapin and Clarence L. Sockwell.

REFRESHER COURSES AMONG THOSE SCHEDULED FOR SPRING

Alabama • Three refresher courses have been announced by the School of Dentistry, University of Alabama, in Birmingham. General anesthesia applicable to dental practice will be taught by James D. Jones, Thomas W. Jones and Charles A. McCallum March 9 and 10; oral roentgenology by Arthur H. Wuehrmann, April 6-8, and partial denture prosthesis by Oliver C. Applegate, April 11-13.

California • A two day course in the use and evaluation of dental materials is offered by the University of California School of Dentistry in San Francisco March 29 and 30. George C. Paffenbarger, senior research asso-

ciate of the American Dental Association at the National Bureau of Standards, will teach. Additionally, the school has scheduled three refresher courses in prosthetics. Complete dentures will be taught February 8 and 9; partial denture prosthesis, March 15 and 16, and immediate dentures, June 8.

The University of California Extension in Los Angeles offers a general refresher course starting Aprii 22 and continuing for eight weeks. More than half the time will be devoted to laboratory technics and clinical procedures.

Oral surgery is offered as a three year graduate program for the year beginning July 1. Training includes clinical and hospital experience and study in the basic sciences. The program is designed to fulfill the requirements of the American Board of Oral Surgery.

Indiana • Televised clinical demonstrations will be part of a postgraduate course in pedodontics at Indiana University School of Dentistry in Indianapolis April 8-11. Ralph E. McDonald and Maury Massler, assisted by members of the faculty, will teach.

Additionally, the school offers a course in crown and bridge laboratory technics for dental technicians February 11-13 and one in partial denture design and construction for dentists and technicians March 11-15. A symposium on medications in dentistry is planned for March 13.

Iowa • A technic for the elimination of occlusal disharmonies will be taught at the College of Dentistry, State University of Iowa, in Iowa City April 18 and 19. Faculty for the course is Gerald P. Ivancie and Frank Wentz of the School of Dentistry, Loyola (Chicago) University.

Loyola (Chicago) • Joseph Kostrubala, chairman of the department of oral surgery at Loyola University School of Dentistry, will teach a course in oral surgery March 11-15. Lectures on pathology and physiology will follow a review of the anatomy of the oral region. Students will perform various types of operations on cadavers, including open and closed reduction of mandibular fractures, partial resection of the mandible with bone grafting and resection of the maxilla for tumors.

Pennsylvania • The schedule of spring courses at the School of Dentistry, University of Pennsylvania, in Philadelphia includes the following: complete denture prosthesis, March 11-16 and March 18-23; endodontics, April 22 to May 3; mandibular third molar, April 1-6; clinical oral pathology for the general practitioner, Thursday evenings, March 7 to May 23, and surgical pathology, Tuesday evenings, March 5 to June 18.

The school also announces the eighth mid-Atlantic States Conference in Dentistry at Buck Hill Falls, Pa., April 14-19. Lester W. Burket will teach. Theme of the meeting is diagnosis and treatment planning for the general practitioner.

Texas • April 22-26 are the dates of a postgraduate course in maxillofacial surgery offered by the University of Texas Dental Branch in Houston. The course, to be taught by lecture, seminar and demonstration, will cover diagnosis and treatment of fractures, neoplastic diseases and developmental deformities. Guest lecturer is Stanley Lane, M.D., chief of the head and neck service, Albert Einstein Medical Center, New York City. Edward C. Hinds, of the school's faculty, will conduct the course.

Toronto • Orthodontics for the general practitioner will be given March 11-15 by the University of Toronto Faculty of Dentistry in Toronto. In addition to lectures, laboratory and clinical sessions will be scheduled. Participants may present practical cases for consultation and discussion. A second course offered by the school is dental oral surgery and anesthesia April 29 to May 3. Enrollment in each course is limited to 12.

Tennessee • Pedodontics will be taught March 18 and 19 at the University of Tennessee College of Dentistry in Memphis. Bernard Rabinowitch of Los Angeles and the pedodontics staff of the College will be the faculty.

Public Health

WALTER PELTON HEADS DENTAL PUBLIC HEALTH BOARD

Walter J. Pelton, chief of the division of dental resources, U.S. Public Health Service, has been elected president of the American Board of Dental Public Health. Dr. Pelton's election was announced in late January.

Selected vice-president-auditor was John W. Knutson, assistant surgeon general, and USPHS chief dental officer. Philip E. Blackerby, Jr., associate general director of the W. K. Kellogg Foundation, is secretary-treasurer. Chester Tossy, assistant director, division of public health dentistry, Michigan Department of Health, was elected a member of the board for a five year term. Dr. Tossy succeeds William A. Jordon of Minneapolis.

The Board will hold its next certifying examination November 1 and 2 in Miami, Fla. Applications may be obtained from Dr. Blackerby, 250 Champion St., Battle Creek, Mich. They must be returned to him no later than July 1.

USPHS DEVELOPS DEVICE THAT CUTS COST OF FLUORIDATION

Two U.S. Public Health Service scientists have developed a device to reduce the cost of adding fluoride to city water supplies, the USPHS announced in mid-January. Present cost of adding fluoride compounds to drinking water averages ten cents a person a year in most sections of the country. Development of a new dissolver makes possible the use of fluorspar, the least costly form of fluoride, which can reduce the average cost to three cents a person a year.

The new device was developed by F. J. Maier, sanitary engineer director, and E. Bellack, chemist, both of the USPHS division of dental public health. An article describing their research is published in the January issue of the *Journal of the American Water Works Association.*

Previously it was not practical to use fluorspar in water supplies because it does not dissolve readily. With the new piece of water works equipment, the fluoride in the fluorspar becomes available in the presence of alum, a chemical presently used in many water plants to clarify water.

The new dissolver, which has been field tested for more than six years, is not yet on the market, but its manufacture by private industry is expected to begin in the near future.

More than one fourth of the people using public water supplies, over 30 million, now drink fluoridated water.

ATLANTIC CITY APPROVES WATER FLUORIDATION

An ordinance authorizing the fluoridation of drinking water for Atlantic City, N.J., was passed unanimously December 20 by the city commissioners. Approval of the New Jersey Department of Health must be obtained before the procedure is put into effect.

Authorization of the decay-preventive measure came after more than 150 fluoridation backers and opponents attended a hearing in the commission chambers.

A number of physicians, dentists and PTA representatives testified for fluoridation. Leading the opposition was the Citizens' Committee Against Fluoridation, whose principal spokesman was Robert J. Mick, Laurel Springs dentist. Dr. Mick currently has a libel suit filed against the American Dental Association charging that the dental organization has issued fluoridation information containing "false and libelous statements" regarding him. The Superior Court of New Jersey in December dismissed charges against five of the seven Association officials named in the suit.

ILLUSTRATED PAMPHLET DESCRIBES WORK OF USPHS

An illustrated, blue and white pamphlet available from the Superintendent of Documents, U.S. Government Printing Office in Washington, D.C., describes dental careers in the U.S. Public Health Service.

Dental officers work with allied professional personnel in research, dissemi-

nation of public health information and in helping the states improve local health services, the booklet explains. A USPHS dental officer may work in one of the USPHS hospitals, in outpatient clinics in the states and Alaska, may be assigned to provide mobile service in dental trailers to isolated stations or may work in a federal prison hospital.

Other assignments are to the National Institute of Dental Research in Bethesda, Md., and to other research centers maintained by the USPHS. The booklet describes qualifications required of officer candidates and the salary and other benefits of USPHS dental careers.

NORTH DAKOTA, ALABAMA NAME DENTAL DIRECTORS

State dental directors were named recently for posts in North Dakota and Alabama. Named director of the division of oral hygiene in North Dakota's State Health Department is John K. Peterson of Minneapolis. Dr. Peterson, who assumes his new post February 1, previously was assistant director. He holds the D.D.S. and M.P.H. degrees from the University of Minnesota. He is a diplomate of the American Board of Public Health.

Sidney L. Miller of Westfield, N. Y., became director of the division of dental hygiene in Alabama's Department of Public Health January 1. Dr. Miller is a graduate of Columbia University School of Dental and Oral Surgery and served an internship in Montefiore Hospital in New York. He has been in private practice for 12 years and served five years with the Army Dental Corps.

SUBSCRIPTS • Aims Chamberlain McGuinness, M.D., was sworn in as special assistant for health and medical affairs to the Secretary of Health, Education and Welfare. He succeeds Lowell T. Coggeshall, who resigned to return to his position as dean of the division of biological sciences at the University of Chicago.

International

DOMINICAN HIGHEST AWARD CONFERRED ON U. S. DENTISTS

The Order of Duarte, Sanchez y Mella, the Dominican Republic's highest award, was bestowed on Harold Hillenbrand, American Dental Association secretary, and Don Jose F. Aubertine of San Francisco at the Second Regional Pan American Dental Congress held in Ciudad Trujillo in October. The award was presented by the Dominican Republic's secretary of foreign affairs, Porfirio Herrera Baez.

The Congress was attended by delegates from most South American countries as well as by dentists from the United States. Men from the United States who took part in the scientific program were: Don Jose F. Aubertine, who also was adviser to the Congress; Gordon Fitzgerald and Wendell Wylie of the University of California; Alver Selberg, Lawrence R. Ludwigsen, Browning Chartrand, Henry Leicester, John Young and Bertram Wolfsohn, all of the College of Physicians and Surgeons; William Maison, president, San Francisco Medical-Dental Study Club, and A. F. Schopper of Kansas City, Mo.

Among those organizing the Congress were Congress president, Hector C. Franco Santoni; Ramon E. Mena

Harold Hillenbrand, American Dental Association secretary (second from right), and Don Jose F. Aubertine, adviser to the Second Regional Pan American Dental Congress (fourth from right), wear the ribbon and medal of the Order of Duarte, Sanchez y Mella awarded them by the Dominican Republic during the Congress October 9. With them are (l. to r.): U.S. Ambassador William Pheiffer, Luis Gomez, Dominican Foreign Secretary Porfirio Herrera Baez and Hector Franco, dean of the Dental College, University of Santo Domingo.

Valerio, secretary; the secretary of public health of the Dominican Republic, dentist Jose Enrique Aybar; Manelic Gasso, F. D. Camino and Pedro Olivaretta.

F.D.I. VISITORS ASSURED WORLD EVENTS WILL NOT CUT TRAVEL

In answer to inquiries received, Lee Kirkland Travel, which is sponsoring European tours in connection with the F.D.I.'s Twelfth International Dental Congress, has assured Congress visitors that the European situation will not curtail 1957 travel. Two tours are planned by the travel agency.

The first trip, 22 days in length, leaves New York August 31 and returns September 21. Tour members visit London, Lucerne, Florence, Rome for the F.D.I. Congress, Rapallo, Nice and Paris. Points of interest include Buckingham Palace, Downing St. and Scotland Yard in London, the Shakespeare Memorial Theatre in Stratford-on-Avon, the Italian and French Rivieras, Monte Carlo casino, the Sorbonne, Notre Dame and Versailles.

A 31 day trip includes London, Brussels, Amsterdam, Dusseldorf, Koblenz, Baden-Baden, Lucerne, Venice, Florence, Rome, Rapallo, Nice and Paris. Information on the tours may be obtained from Lee Kirkland Travel, 1231 Baltimore Ave., Kansas City 5, Mo.

ARPA RESEARCH PRIZE TO BE GIVEN DURING F.D.I. CONGRESS

The first "Prize Dr. H. C. Rene Jaccard" of the ARPA Internationale will be awarded this September during the Twelfth International Dental Congress of the Fédération Dentaire Internationale in Rome. The medal and diploma will be given for the best essay describing original research in periodontal disease. Presentation of the award will be at the 25th anniversary celebration of the founding of ARPA September 11.

Persons wishing to compete for the prize may submit six copies of their manuscripts to ARPA Internationale presi-

The F.D.I.'s Twelfth International Dental Congress September 7-14 will be housed in the Universal Rome Exhibition buildings (above). Congress participants can visit the famed ruins of the ancient Roman Empire, which, at its height, extended from Africa to the British Isles and left its imprint in the language and culture of the modern world. The Pantheon (facing page, left), temple to all the gods, was built in the time of Augustus (27 B.C. to 14 A.D.). Center: Temple to Saturn in the Roman Forum, the old city's civic center and market place. Below: The arch of Drusus, built in the last century before Christ.

dent, Prof. A. J. Held, Institut Universitaire de Medecine Dentaire, 30 rue Lombard, Geneva, Switzerland, before May 1. ARPA plans to award a prize for periodontal research every two years.

PREPARE REPORTS FROM WORLD DENTISTRY FOR F.D.I. MEETING

The summarizing of papers on dental subjects from all over the world has begun, preparatory to their presentation at the International Dental Congress of the Fédération Dentaire Internationale September 7-14 in Rome, Italy.

Publication of these reports, begun last September, will continue through July 1958 in the *International Dental Journal*, which has exclusive publishing rights.

Membership in the F.D.I. carries with it a subscription to the *International Dental Journal* and to the F.D.I. *News Letter*. Information on the International Dental Congress as well as on F.D.I. membership may be obtained from O. H. Moen, U.S. national treasurer for the F.D.I., 6 Main St., Watertown, Wis.

JACOB CALANCHE, PROMINENT VENEZUELAN DENTIST, DIES

Jacob Calanche, dean of the College of Dentistry of the Universidad de Los Andes of Venezuela, died October 26. He was 35 years old. Dr. Calanche had been teaching for 14 years. In addition to his deanship at the Universidad de Los Andes, he was professor at the Universidad Central. He was also president of the delegates from his section of the country to the national organization, the Colegio de Odontólogos de Venezuela.

ALABAMA AND SANTO DOMINGO SCHOOLS OFFER JOINT COURSE

The University of Santo Domingo College of Dentistry announces three courses to be given in conjunction with the University of Alabama School of Dentistry. The three courses will be held in Ciudad Trujillo, Dominican Republic.

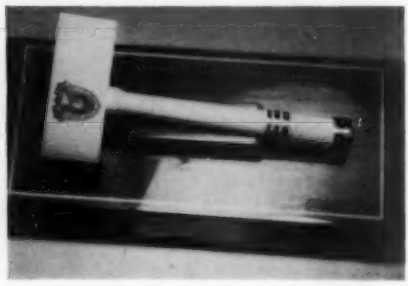
A. E. Thomas, chairman of the department of operative dentistry and endodontics at the Alabama school, will teach

July 8-12. Sidney B. Finn, chairman of the department of pedodontics, teaches September 9-13. A course in complete dentures will be taught by Horacio Read Barreras, former dean of the Dominican dental school, August 26-30. Further information may be obtained from Hector C. Franco Santoni, dean, University of Santo Domingo College of Dentistry, Ciudad Trujillo, Dominican Republic.

DENTIST ON FULBRIGHT GRANT TO TEACH IN AUSTRALIA

Kenneth E. Wessels, head of the department of pedodontics in the University of Iowa College of Dentistry, has been named a visiting lecturer at the University of Sydney, Australia, for nine months beginning in March. He is the first dental professor to go to Australia under the Fulbright Act, which sends Americans to study and teach in other countries.

Dr. Wessels will lecture at other major Australian universities as well as at Sydney and will work with the Australian Dental Association in promoting preventive dentistry.



A solid piece of ivory, carved with Acanthus leaves and banded with gold, forms the new gavel of the American Dental Society of Europe. The engraving on the gavel's head represents the eastern seaboard of America and the western coast of Europe. The gavel rests on a sounding block of mahogany with an ivory inlay. The Society is composed of dentists practicing abroad who have degrees from American dental schools.

In addition to his teaching position at Iowa, Dr. Wessels is director of the children's dental clinic in the college and is clinical professor of pediatrics in the college of medicine. He is also supervisor of the dental section of the Iowa Hospital School for Severely Handicapped Children.

CHOOSE COMMITTEE FOR AUSTRALIAN DENTAL MEETING

The executive committee has been selected for the next national Australian Dental Congress, to be held in 1959. Committee members are: M. S. Joyner, president-elect; R. S. Blackburn, vice-president; P. M. Wesslink, vice-president; B. W. Leach, treasurer, and M. J. Barrett, secretary. Dentists from the United States interested in the meeting, may write to the secretary, 51 Grenfell St., Adelaide, South Australia.

SUBSCRIPTS • According to the Czechoslovakian periodical *Svobodne Slovo,* dentists and physicians in that country must cease private practice before July. Only exceptions are members of university faculties or winners of the Czechoslovakian national prize for medicine or dentistry. . . . The University of Southern California Dental Study Club of Mexico will hold its tenth annual seminar May 12-16 in Mexico City. Information may be obtained from Roberto Woodworth, secretary, Melchor Ocampo, 487-302, Mexico, D.F.

National Defense

GENERAL RIDGELY TO HEAD DENTAL ACTIVITIES AT BROOKE

Brig. Gen. Dale B. Ridgely, formerly chief of the dental service at Letterman Army Hospital in San Francisco, has

Sanford M. Moose (center), professor of oral surgery at the College of Physicians and Surgeons, San Francisco, addressed 150 military dental officers October 5 in Frankfurt, Germany. Shown with Dr. Moose are (l. to r.): Colonel Dirksen, second medical detachment; Colonel Day, U. S. Army Dental Clinic, Frankfurt; Lieutenant Col. Ream, dental surgeon, U. S. Army Hospital, Frankfurt; Dr. Moose; Colonel Clapp, dental surgeon, headquarters, Northern Area Command; Colonel James, dental surgeon, headquarters, Northern Area Command, and Colonel Nielsen, dental surgeon, U. S. Army Hospital, Heidelberg.

been named director of dental activities at Brooke Army Medical Center in Fort Sam Houston, Texas. General Ridgely succeeds Brig. Gen. James M. Epperly, who recently became chief of the Army Dental Corps.

General Ridgely began his Army career at Letterman in 1926 after graduation from the School of Dentistry, St. Louis University. He served in World War II, and in 1945 went to Japan as chief of the dental division of the Public Health and Welfare Section of the General Headquarters Command. He set up a program of dental training in that country and worked closely with Japanese dental schools in an advisory capacity.

General Ridgely was appointed brigadier general in October 1954. He is a Fellow of the American College of Dentists and of the International College of Dentists.

REGULAR NAVY EASES RULES ON ADMITTING RESERVISTS

Reserve dental officers may now apply for appointment in the Regular Navy Dental Corps without having had a prior tour of duty. The eased regulations were announced by the Navy in mid-January. Appointment will be in the grades of lieutenant commander or below. The Regular Navy Dental Corps is at an all time high of 860 dental officers.

ARMY "PERIOD OF ALERT" NOTICES NO CAUSE FOR ALARM

A recent Army notice entitled "Period of Alert for Active Duty for Members of the Army Reserve," sent to medical and dental students who hold reserve commissions, is no cause for alarm, according to a recent statement issued by Col. James K. Kidder, special assistant

Rear Admiral R. W. Malone, chief of the Navy Dental Corps, inspects the work of Capt. Arthur M. Chasin (DC) USN, while Maj. Gen. Oscar P. Snyder (right), recently retired chief of the Army Dental Corps, and John Brauer (left), civilian member of the Department of Defense dental advisory committee, look on. The group toured the dental service of Fort Belvoir, Va., in mid-September. Others of the group, not shown in the photo, were Brig. Gen. Marvin E. Kennebeck, chief of the Air Force Dental Corps; Brig. Gen. James S. Cathroe, USAF, representative assistant for dental services; Thomas P. Fox and Francis Reichmann, Department of Defense dental advisory committee, and Bernard Beazley, secretary, American Dental Association's Council on Federal Dental Services.

for reserve forces to the Army Surgeon General.

Colonel Kidder states that the notices were sent as a routine reminder of the law and that the Army intends to continue granting delays in calls to active duty for students completing their dental education, for those in graduate study and those in full-time research.

EXPLAIN DRAFT STATUS OF 4F AND 5A SENIOR STUDENTS

In response to inquiries received concerning the allocation under the senior dental students program of students classified as 4F and 5A, the American Dental Association's Council on Federal Dental Services has provided the following information.

The Department of Defense has advised that senior students with a draft classification of 4F or 5A were not allocated to any military department when the 1957 senior dental student questionnaires were processed.

Students wishing to be allocated may write Frank B. Berry, M.D., assistant secretary of defense (health and medical), Washington 25, D.C. They will be allocated to the service of their choice. When notice is received of the allocation, they may apply for commissions directly to that branch of the Armed Forces.

General

EXPLAIN HOSPITAL GROUP'S OPINION ON DENTAL STAFF

The opinion of the American Hospital Association on hospital privileges for dentists is explained in a short article appearing in the December 16 issue of *Hospitals*, the A.H.A.'s journal.

In answer to the question "What is the relationship between dentists and medical staffs of hospitals?", LeRoy E. Bates, M.D., associate secretary, Council on Professional Practice, writes:

> The feeling of the American Hospital Association is that qualified dentists must be given hospital privileges and work very closely with the medical staffs of hospitals.
>
> When dentists' patients are admitted to hospitals, an admission history and physical examination should be performed by a physician on the medical staff of the hospital who would be responsible for the total medical care to that patient throughout his hospital stay. A medical staff physician should also interpret routine

laboratory work and if surgery and anesthesia are planned, will render an opinion on the condition of the patient for these procedures.

Many medical staffs amend their bylaws so that the title is "Bylaws, Rules and Regulations of the Medical and Dental Staff . . ." They then write into these bylaws the qualifications which dentists must possess to be eligible for staff appointment, the procedures for granting privileges, the terms of appointments and the provision for establishing a department of dentistry or a section of oral surgery. The relationships of this department or section with the other departments of the medical staff is also described.

A PENNSYLVANIA BLUE SHIELD CONTRACT ADDS ORAL SURGERY

Certain oral surgery procedures have been included under the new Blue Shield Plan for some 640,000 Pennsylvania steelworkers and their dependents, according to the November issue of *Pennsylvania Dental Journal.* A number of ancillary services, including the dental benefits, were added when Blue Shield coverage was again selected by the United Steelworkers of America and the steel companies in negotiations last September.

Oral surgery services included are treatment of diseases and injuries to the jaw and extraction of impacted teeth. The beneficiary must be a patient for 24 hours or for continuous parts of two consecutive days in an accredited hospital. The reduction of fractures and dislocations of the jaw, however, can be performed either in or out of a hospital.

NEW REPORT MADE ON ANESTHESIOLOGISTS' GROUP

During the past several years, members of the dental profession have been solicited for membership in the International Association of Anesthesiologists, Inc., 210 E. Lexington St., Baltimore, Md. On several occasions, American Dental Association publications have pointed out that the I.A.A., Inc., has no official connection with the Association. In view of the fact that dentists are still being solicited, the report from the November 1956 issue of *Newsmonthly,* published by the American Dental Society of Anesthesiology, is considered of interest:

The International Association of Anesthesiologists has on a number of occasions circularized the dental profession in an effort to solicit membership. This solicitation has been undertaken with promises of an engraved certificate and entitlement to a Fellowship (F.I.A.A.) upon the acceptance of "certain qualifications." The "awarding" of a degree of this sort, without the backing of any recognized medical or dental institution, constitutes a highly unethical practice.

The International Association of Anesthesiologists has been looked upon with disfavor by the medical and dental professions. Organized medical anesthesiology societies have recommended that their members ignore these letters of solicitation.

It is interesting that the *International Journal of Anesthesia,* published by the I.A.A., does not list an editor and specifies two attorneys as managing editor and co-editor. The last issue, published in June 1956, contains a number of full length articles which were reprinted from other publications. . . .

HORACE WELLS CLUB CITES HARTFORD ANESTHESIOLOGIST

Ralph Moore Tovell, M.D., anesthesiologist at Hartford (Conn.) Hospital, was honored December 8 by the Horace Wells Club of Hartford. The Club presented Dr. Tovell with its first achievement award, granted for outstanding work in anesthesia.

Dr. Tovell, in addition to his hospital post, is editor of the journal *Anesthesiology,* has been assistant professor of anesthesiology at Mayo Clinic, lecturer in anesthesiology at Yale Medical School and is the author of some 120 papers.

In additional actions, the club elected E. Arthur Perry of Bridgeport, president; William H. Kirschner of New Haven, vice-president, and Eugene M. Clifford of Hartford, secretary-treasurer.

The Brandt brothers, all Navy dentists, fulfill the lifelong ambition of their father (second from right), dentist Carl L. Brandt. Denied a Navy career himself because he began to practice in 1902 before there was a Navy dental corps, he urged his sons to see the world with the Navy. Left to right are Capt. Max J. Brandt, Capt. Connie H. Brandt, Dr. Brandt, and Capt. Paul L. Brandt.

FOUR GENERATIONS OF DENTISTS IN GEORGIA FAMILY

Capt. Sam G. Cole, Jr., a graduate of Emory University School of Dentistry, class of 1955, and presently on military duty, is a young member of the profession whose great grandfather, grandfather and father preceded him in the practice of dentistry. The four generations of dentists in the Cole family began with great grandfather William E. Cole, a practicing Georgia dentist of the Civil War period. Grandfather Thomas Cole practiced in the same Georgia town as his father. He was in practice for 62 years and was president of the Georgia Board of Dental Examiners for 26 years.

Father Sam G. Cole, Sr., is an Atlanta orthodontist. He is a past president of the Southern Society of Orthodontists, of the Fifth District Dental Society and of the Thomas P. Hinman Mid-Winter Clinic. He was a member of the first committee on dentistry of the National Research Council, National Academy of Sciences.

Captain Cole, Jr., completes his military duty this summer.

HINMAN CLINIC PROGRAM HAS CLINICIANS FROM SIX STATES

Clinicians from six states and one from Oslo, Norway, have confirmed speaking engagements for the Thomas P. Hinman Mid-Winter Clinic in Atlanta, Ga., March 17-20.

They are: William R. Alstadt of Little Rock, Ark., president-elect of the American Dental Association; B. Nygaard Ostby of Oslo, Norway; John Wilson of Columbus, Ohio; Ralph Phillips, Indianapolis; Capt. Theodore A. Lesney, San Diego; Hugh McKinnon, Troy, Ala., and George Crane of Chicago.

Information on the clinic may be obtained from Thad Morrison, Sr., chairman of the publicity committee, 490 Peachtree St., N.E., Atlanta, Ga.

LIONS CLUB DENTAL PROJECT ATTRACTS NATIONAL INTEREST

A dental health project, sponsored by the Lions Club in the West Virginia towns of Wyatt and Shinnston, has attracted national attention. The project, which included examination of the teeth of all school children in the two towns, was described in *The Lion,* official publication of Lions International. The program led to correction of dental disorders in about 50 per cent of the children. Both the West Virginia Health Department and the U.S. Public Health Service sent representatives to the towns to study the project, and health officials hailed the Lions Club program as one of the most effective ever observed. The project was directed by B. A. Starcher of Shinnston.

ISAAC SCHOUR ELECTED HEAD OF AAAS DENTISTRY SECTION

Isaac Schour, dean of the University of Illinois College of Dentistry, was elected 1957 chairman of Section Nd (Dentistry) of the American Association for the Advancement of Science in late December. Dr. Schour succeeds H. Trendley Dean, secretary of the American Dental Association Council on Dental Research. Chosen committeeman-at-large to succeed Wendell L. Wylie of the University of California was Joseph C. Muhler, Indiana University School of Dentistry. Dr. Muhler serves a four year term. Russell W. Bunting of Ann Arbor, Mich., continues as secretary. At present, there are 1,137 members in the AAAS dentistry section. The 1957 meeting of the AAAS will be held in Indianapolis December 26-31.

NBS ASSOCIATE DIRECTOR IS AAAS PRESIDENT-ELECT

Wallace R. Brode, M.S., Ph.D., associate director of the National Bureau of Standards, was chosen president-elect of the American Association for the Advancement of Science at its December meeting. Dr. Brode is an internationally recognized authority in spectroscopy and chemistry. He is a member of the board of directors of the American Chemical Society and chairman of the Scientific Research Society of America.

WILLIAM PRUDEN, SAID TO BE OLDEST DENTIST, DEAD AT 95

William H. Pruden of Paterson, N.J., believed to have been the oldest practicing dentist in the nation at his retirement seven months ago, died at his home January 5. He was 95 years old.

Dr. Pruden was born in Hanover Neck, N.J., May 15, 1861. He became apprenticed to Benjamin F. Luckey, a dentist of Paterson, at the age of 19 and served as Dr. Luckey's assistant while completing his formal education at the old New York College of Dentistry, now New York University.

In 1888 he entered private practice and later was joined by his son Kenneth, and then by his grandson, William. Dr. Pruden estimated that during his long career he treated some 125,000 patients, including United States vice-president Garrett A. Hobart, who served under William McKinley, and Billy Sunday, evangelist.

ALPHA OMEGA HONORS HARRY LYONS, ASSOCIATION HEAD

Harry Lyons, American Dental Association president, was awarded the achievement medal of the Alpha Omega Fraternity at a banquet attended by more than 1,000 persons at the Statler Hotel in Boston December 30.

Dr. Lyons, dean of the School of Dentistry of the Medical College of Virginia, was cited for the leadership he has provided the profession in education, research and as a practitioner. In the past

Jesse Trager (left), of Baltimore, president of Alpha Omega dental fraternity, presents that group's achievement award to Harry Lyons, American Dental Association president, at a banquet December 30 in the Statler Hotel, Boston.

20 years, the achievement medal has been presented to a number of distinguished dentists, physicians and scientists, including Jonas E. Salk and the late Albert Einstein. Dr. Lyons is the third Association president to receive the award. Previous recipients are LeRoy M. S. Miner of Boston and J. Ben Robinson of Morgantown, W. Va.

EASTER SEAL DRIVE STARTS IN MARCH: SUPPORT ASKED

March 15 marks the opening of the 1957 Easter Seal Drive of the National Society for Crippled Children and Adults. In asking support for the fund raising campaign, the society announced that contributions will help support its 15 million dollar annual program of research, treatment and rehabilitation, including services such as speech therapy, nursery and preschool centers, special education projects, camps and parent education.

To assist in the specialized education of doctors, therapists, teachers and social workers, 2,010 scholarships and fellowships have been awarded by Easter Seal societies in the past few years. Contributions may be sent to the National Society for Crippled Children and Adults, 11 S. La Salle St., Chicago 3, or to local Easter Seal societies.

KANSAS CITY OFFERS INTERNSHIP, FELLOWSHIPS

A pedodontics internship at Mercy Children's Hospital in Kansas City, Mo., has been approved recently by the American Dental Association's Council on Dental Education. This training is available through the University of Kansas City School of Dentistry.

In addition, the chief of dental service at the hospital announces the availability of two fellowships in pedodontics. Stipend is $3,600 a year plus allowances for travel to scientific meetings.

F.B.I. ASKS DENTISTS' HELP IN SEARCH FOR WANTED MAN

Dentists have been asked to help the F.B.I. in its search for David Daniel Keegan, alias Burt Williams, who is being sought for robbery and murder committed in Iowa. Keegan is believed to be in need of dental care.

He has upper anterior teeth missing, probably the upper right lateral incisor and the upper left central incisor. They have been replaced by a fixed bridge. There is a three surface MOD filling in the upper left second bicuspid.

In the lower arch, six anterior teeth have been replaced by a partial denture with clasps on the lower right and left first molars. The lower left first molar is either badly decayed or missing. Third molars are missing.

The following teeth, if present, are filled: upper right first and second bicuspid, upper left second bicuspid and second molar, lower right second molar. Gold has been used on one or two upper front teeth.

Keegan had an advanced case of periodontal disease in 1951 and may have had all teeth extracted since February 1954. He is 39 years old, 5 feet 11 inches tall, has black hair, protruding eyes and a ruddy complexion.

Dentists who have treated Keegan in the past or who treat him in the future are asked to call the nearest office of the F.B.I. listed on the first page of their phone book.

Three men, each with more than 50 years in dentistry, were honored at the 50th anniversary banquet November 19 of the Woodbury Gold Foil Study Club, which they helped to found. Receiving gold automatic pencils from Jim Kapp (right) of St. Joseph, Mo., who acted as master of ceremonies, are (l. to r.): E. H. Bruening, 75 years old, of Tucson, Ariz.; Peter Barber, 84, of San Francisco, and Percy Hunter, 78, of Omaha, Neb.

WOODBURY GOLD FOIL CLUB CELEBRATES HALF CENTURY

A half century of activity was marked November 19 by the Woodbury Gold Foil Study Club at a banquet at the Sheraton-Fontenelle Hotel in Omaha, Neb. Participants in the anniversary affair honored three of the study club's founders, Peter T. Barber of San Francisco, Percy Hunter of Omaha, Neb., and E. H. Bruening of Tucson, Ariz. Additionally, during clinic sessions, club members placed 60 gold foil restorations in the mouths of juniors and seniors from Boys Town.

Officers elected were: E. J. LaPorte of Omaha, Neb., president; Hugh McDonnell, also of Omaha, vice-president, and William Kramer of Lincoln, Neb., secretary-treasurer.

Also • T. M. Graber, director of Northwestern University Cleft Lip and Palate Institute in Chicago, is on a 42 day lecture tour of the Far East. Sponsored by the State Department's International Education Exchange Commission, the tour will include Japan, India, Iraq, Greece, Philippines and Thailand. Dr. Graber's 56 lectures at dental societies and schools will cover dental education, cleft palate and orthodontics. . . . December marked the twentieth year of the Zoller Memorial Dental Clinic in Chicago. At a dinner celebrating the event, J. Roy Blayney, past director, reviewed the contributions to research made by the clinic. Frank J. Orland is present clinic director. . . . Sigma Epsilon Delta dental fraternity has oversubscribed its first plane chartered for the F.D.I. Twelfth International Dental Congress. Chairman of the committee on arrangements is Martin Entine of Philadelphia. . . . Harry Duncan, 79 year old dentist of Oak Hill, W. Va., won $60,000 on NBC-TV's Break the Bank December 18. His topic was the Gospel of St. Luke. . . . March 1 is the deadline for applications for scholarships offered by the Medical Library Association for summer study in medical librarianship. Information is available from Anna M. Sexton, librarian, Division of Laboratory and Research, New York State Department of Health, Albany 1, N. Y. . . . Georgetown University School of Dentistry will hold its annual reunion March 9 in Washington, D.C. . . . April 17 and 18 are the dates of the annual postcollege assembly of the College of Dentistry, Ohio State University, in Columbus.

Federal income tax: deductibility of travel expenses

The Council receives many inquiries questioning the deductibility, for federal income tax purposes, of expenses incurred in attending scientific or professional meetings both in this country and abroad. In this connection, the Council calls attention to Revenue Ruling 56-168, I.R.B. 1956-17, 6 which is reprinted in its entirety below:

The question frequently arises whether the expenses of taxpayers and members of their families in making business trips and attending business or professional conventions are deductible for income tax purposes, especially where opportunities exist for personal vacationing in connection with the trip or convention. The purpose of this Revenue Ruling is to set forth guides for taxpayers and field officers of the Internal Revenue Service in determining the allocation and deductibility of such expenses.

Section 162(a) of the Internal Revenue Code of 1954 provides for the deduction of all the ordinary and necessary expenses paid or incurred during the taxable year in carrying on any trade or business, including traveling expenses (including the amount expended for meals and lodging) while away from home in pursuit of a trade or business. Only those expenses which are ordinary and necessary in the conduct of the business and are directly attributable to it may be deducted. See sections 39.23(a)-1, 39.23(a)-2(a), and 39.-23(a)-2(f) of Regulations 118, which are applicable by virtue of Treasury Decision 6091, C.B. 1954-2, 47. Section 262 of the 1954 Code provides, with exceptions not here material, that no deduction shall be allowed for personal, living or family expenses.

Where opportunities exist for personal vacationing in connection with business trips or the attendance of business or professional conventions, and especially where the taxpayer is accompanied by one or more members of his family, it is apparent that examining officers of the Service have a duty to give especially careful scrutiny to deductions taken in returns for the expense involved in order to assure against abuse of the deduction permitted by section 162(a) of the Code. In those cases where a business purpose is served, it is also necessary to determine what portion of the total expense is deductible as an ordinary and necessary business expense and what portion represents nondeductible personal or living expenses.

In those cases where a taxpayer makes a business trip such as attending a convention or other business meeting and, as an incident of such trip, engages in some personal activity such as sightseeing, social visiting or entertaining, or other recreation, that part of the total expense of the trip which is directly attributable to the taxpayer's business will be treated as deductible notwithstanding the incidental personal activity. That part of the total expense which is properly allocable to such incidental personal activities will be treated as nondeductible personal or living expenses. Where the purposes of a trip are primarily personal, the entire expense involved will be treated as nondeductible personal or living expenses notwithstanding that the taxpayer engages or participates in some incidental activity related to his business.

Where a taxpayer's wife accompanies him on a business trip, those expenses attributable to her travel are not deductible unless it can be adequately shown that the wife's presence on the trip has a bona fide business purpose. See Rev. Rul. 55-57, C.B. 1955-1, 315. The wife's performance of some incidental service does not cause her expenses to qualify as deductible business expenses. The same rules are applicable with respect to any other members

of the taxpayer's family who accompany him on such a trip.

The application of the foregoing guides may be illustrated by the following examples:

(1) A taxpayer makes a business trip for the purpose of attending a convention held in a coastal city. During the period of the convention, he also engages in local sightseeing, entertaining, and visiting unrelated to his business. He also arranges to take a post-convention cruise made available to individuals attending the convention, the purpose of which is primarily recreational although some incidental sessions are scheduled for lectures, discussions, or exhibitions related to the business interests of the group holding the convention. The expenses paid for the local sightseeing, entertaining, and visiting and the entire cost of the post-convention cruise are deemed to represent nondeductible personal expenses.

(2) A taxpayer's wife accompanies him on a business trip, which may include his attendance of a business or professional convention. She occasionally types notes or performs some similar service and accompanies him to luncheons and dinners. The performance of such services does not establish that her presence is necessary to the conduct of the taxpayer's business.

(3) Under the circumstances involved in example (2) above, the cost of transportation and lodging exceeds the cost for single fares and accommodations but is less than twice the single rate. The amount deductible as an ordinary and necessary business expense on account of transportation and lodging is the amount directly related to the business purpose of the trip, that is, the cost at the single rate for similar accommodations. The amount by which the total expense is increased because of the wife's presence and the entire cost of the wife's meals are not deductible.

Prepared by the Council on Legislation, American Dental Association.

The Reader Comments

THE JOURNAL *devotes this section to comment by readers on topics of current interest to dentistry. The editor reserves the right to edit all communications to fit available space and requires that all letters be signed. At the request of the author, signatures will be deleted before publication. Printed communications do not necessarily reflect the opinion or official policy of the Association. Your participation in this section is invited.*

The Editor

SEEKS OTHERS INTERESTED IN DENTISTRY FOR THE AGED

For 20 years, on a voluntary basis, I have been dentist for the Jewish Home for the Aged in Detroit. I would like to contact other dentists who have been providing care to the aged so that we may gather together in a society of some sort to further our knowledge of the subject. I would be happy to correspond with interested dentists.

H. M. Friedman, D.D.S.,
9219 Dexter Boulevard, Detroit

PHYSICAL EXAMINATIONS OF DENTAL PATIENTS

The requirement of a physical examination by a physician for dental patients receiving a general anesthetic in a hospital poses a serious medicolegal problem. This requirement was deemed necessary in the belief that all dentists are not qualified to perform the examination. In addition, the question was raised as to the dentist's legal right to evaluate the patient's physical condition for surgery and anesthesia.

Since it is an established policy for the physical examination to be given by the physician for hospitalized dental patients, then from a medicolegal standpoint, it is imperative that such an examination be given to a patient receiving a general anesthetic in the dental office where conditions may be less ideal.

Furthermore, a court of law could assume that the patient examined by a physician and certified to be in good health and who subsequently died in the course of the office anesthetic was mismanaged by the dentist.

If a dentist is not qualified to perform a physical examination for his patient, then he could not evaluate and treat cardiovascular and respiratory complications that may occur during an anesthetic given by him or under his direction. However, if the dentist is qualified by training and by law to administer general anesthesia or direct its use, then he is properly qualified to perform the necessary physical examination and to evaluate his patient.

The right of the dentist in anesthesia has been seriously jeopardized by this policy of the Joint Commission on Accreditation of Hospitals in requiring that a physical examination be done only by a physician.

Robert M. Booth, D.D.S., Springfield, Ill.

DENTAL SOCIETIES AND THE SUPPORT OF FLUORIDATION

I have been reading the reports on the promotion of fluoridation in THE JOURNAL and in the *News Letter*, and they give me cause for concern.

We have spent many years building up good public relations. Are we going to retain the good will of the populace in face of all the name calling and recriminations hurled at all who question the propriety, validity and morality of this question? How is the populace going to react in those cases where no vote is permitted? How are the people going to react when a referendum is held, and it wins or loses by a slight majority? There is only one group that will feel the indignation; that is the membership of the component dental society.

I doubt that the promotion of fluoridation is a proper function of the American Dental Association and its components and suggest that we get out of this fight.

If the U.S. Public Health Service feels that this is a good measure, let the Health Service promote it, and when the totals come up for analysis, let it take all the credit or all the blame for the results.

Reuben Feltman, Passaic, N. J.

COUNCIL ON DENTAL THERAPEUTICS
COUNCIL ON DENTAL RESEARCH
COUNCIL ON DENTAL HEALTH

Clinical testing of dental caries preventives: a summary

A. L. Russell, D.D.S., M.P.H., Bethesda, Md.

This is a summary of material in a brochure entitled *Clinical Testing of Dental Caries Preventives,* published in 1955 by the Council on Dental Therapeutics, the Council on Dental Research, and the Council on Dental Health of the American Dental Association. The brochure reports on a conference held in November 1953, convened "to develop uniform standards and procedures recommended for clinical studies of dental caries." The object was not to suggest standardization of research, but rather to outline basic general principles of universal acceptance and, so far as possible, methods through which these principles could be applied to the clinical trial of a caries-preventive agent. This summary, prepared at the request of the three Councils, combines the essential material into a single exposition which follows the chronological sequence of an actual field trial. For more detailed information the brochure itself should be studied.

INSTITUTION CONDUCTING THE RESEARCH

The field trial should be directed by an individual with an appreciation of both the clinical and basic science aspects of the problem under study. Cooperation of and consultation with scientists in such fields as biochemistry, bacteriology, pathology, pharmacology, and biometry should be readily available to him. The institution should possess adequate permanent scientific equipment, so that pertinent leads may be explored as they arise. It should be stable financially, so that continuity of long-term studies is assured. It is essential that the institution have complete freedom concerning matters of publication of findings. If financial support is accepted, the institution must have freedom to exercise its discretion in the disbursements made from this fund.

PRELIMINARY INVESTIGATION

As a preliminary to the field trial of a possible caries-preventive agent, the investigator must satisfy himself that the agent will do his subjects no harm. The director of the study should know the complete composition of any agent tested.

Beyond these ethical points, a certain minimum of preliminary investigation is

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essential to sound study design. Some estimate of the probable efficacy of the agent must be made before sample sizes can be estimated, and design is influenced importantly by the characteristics of the population chosen for study. Such factors as the number of people available, their ages, stability of residence, socioeconomic and racial backgrounds, and their general patterns of caries attack as measured by the contemplated examination method must be known and considered during the planning period.

DESIGN OF STUDY

As a rule, the simpler the experimental design, the fewer the experimental errors. The first step in design is a clear statement of the hypothesis to be tested in the trial.

Choice of Statistical Test • At the conclusion of the study it must be shown by clear and simple means that response to the measure used in the study group was significantly and importantly better than was response to a placebo (or to no treatment) in the control group, or that the result was negative. To assure this outcome without undue waste of effort, the study should be designed to use the most appropriate statistical test. This test should be chosen by a statistical analyst who has participated in planning for the study from the outset, and who has been thoroughly oriented in its philosophy and proposed method.

His final analysis will usually contrast the average number of new carious teeth or carious surfaces per person in the study group, over the period of the test, with the average number of new carious teeth or surfaces per person in the control group.

Choice of Index • Caries experience has been reported in units as large as the individual person (usually, as the percentage of persons who develop lesions in one or more of the teeth which were caries-free at the start of the test) or in units as small as differences in severity or extent between individual lesions. Two general principles governing choice of index were accepted by the conference:

a. The choice of index to be used depends on the objective of the experiment.

b. The index unit should be small enough to be sensitive to differences in caries experience, but not so small that the added sensitivity is lost through increased error due to difficulty in measurement.

It was the consensus of the conference that present experience warranted the following conclusions:

1. The unit of measurement most appropriate for studies with a limited number of subjects is the single tooth surface unit, usually expressed as "DMFS." The number of previously noncarious surfaces which have become carious during the study is determined when this index is used.

2. Although results of a study sometimes may be expressed appropriately by the average number of teeth that become carious in the course of the trial, these units larger than the single surface should not be recommended generally for clinical tests.

3. Units smaller than the single surface (for example, the number of new carious lesions) should not be recommended until their potential sensitivity has been determined to the degree that an index based on these smaller units can be applied with confidence.

These decisions followed presentation of a study report by A. W. Radike and P. C. Kitchin in which five different units of measurement had been applied to actual examination records from five sources, using sample sizes as small as 75 and as large as 850 individuals, in which analyses equivalent to the evaluation of 180 clinical trials were performed. The findings of this study may be summarized as follows:

a. An index based on the percentage of subjects who develop lesions in one or more of the teeth which are caries-free at the start of the test has the advantage of simplicity but is relatively insensitive.

b. The sum of newly decayed, missing and filled permanent teeth (DMFT) is the best-known index which uses the tooth as the unit of measurement, and it has been used satisfactorily to measure dental caries experience. In the clinical trial, however, it does not measure the incidence of new cavities in all of the teeth and hence it is relatively insensitive. The index should be expressed as the average number (DMFT) per individual.

c. The sum of newly decayed, missing and filled permanent tooth surfaces (DMFS) is considered the surface index of choice, and the DMFS should be expressed as the average number per person.

d. The cavity, or lesion, has been used in some studies. In instances of high caries activity, when the individual lesions extend so rapidly that they coalesce during a test period, the cavity as a unit may indicate fewer cavities at the end of the test period than at the beginning. This and other factors introduce an error which tends to underestimate a true difference between groups. This unit is less sensitive than the surface unit.

e. Depth, volume, and area units have been used. These have no clear morphological basis. Those tested were no more sensitive to differences than the tooth unit and less sensitive than the surface unit.

Several other suggestions on method which are somewhat pertinent to choice of index may be noted here. Permanent teeth lost during the course of the study should be considered as lost because of dental caries, with the assigned unit value dependent on the index used. The surface value assigned to teeth so lost may be determined by the average number of surfaces involved when teeth are recommended for extraction; this value should be determined at the beginning of the experiment. Some latitude must be allowed the investigator in his treatment of teeth which erupt during the course of the study, but the manner in which these teeth are considered should be reported. Results should be stated for the entire mouth, rather than for selected individual tooth types or surfaces.

Choice of Examination Method • A very considerable flexibility in choice of examination method was left to the investigator. Principles stated were:

a. Final choice of the method of examination is left to the individual investigator, whose decision may in part be determined by the multiple purposes of the study, the number of individuals studied, and the duration of the experiment.

b. Since the object of the clinical trial is a comparison between groups, consistency is more important than refinement of examination technic; valuable information may be elicited, provided the conditions of the examination are clearly stated, even if the procedure is not complicated. Hence, the simplest examination procedure adequate to test the hypothesis should be adopted.

c. Blind examinations tend to assure uniform examination of control and study groups. Every effort should be made to keep the examiners unaware of the groups to which the subjects are assigned, and preferably the examiner should be unaware of the agent used in each group. It is desirable to employ a random order of examination and to use new charts for each examination without any clues to previous treatments or examinations.

d. Laboratory tests for caries susceptibility should not be used as the sole criterion for determining the ability of therapeutic agents to limit tooth decay.

It was the consensus that it would be unwarranted to set up any strict requirement for roentgenograms, though there was some difference of opinion on this

point. The need for roentgenographic examination is dependent to some extent on the caries index to be used. When roentgenograms are used, cavities will be detected at an earlier stage than with mirror and explorer, but additional errors will be introduced; neither method will discover all of the cavities in all mouths.

Roentgenograms provide tangible evidence in caries examinations. When only one of two molars is recorded as present at the beginning and at the end of the study, it is important to establish that it is the same molar; this distinction is easily made by roentgenograms. When used in conjunction with clinical observation, roentgenographic examination provides the more complete estimate of caries experience, and this may be essential for a proper test of the hypothesis.

On the other hand, clinical plus roentgenographic examination is more costly and time-consuming than clinical examination alone. Other factors being equal, a more nearly valid result will be obtained when less effort is expended in the examination and the major effort is directed to the examination of larger numbers, than when the examination is so complex that it forces limitation to a comparatively small group. A sample of adequate size must be studied regardless of the method of examination used. (Statements on pages 16, 21 and 29 of the brochure, which discuss the use of complex examination procedures in small-group studies, were not intended to infer that sample size requirements may be disregarded.) If caries is very active, incipient interproximal lesions should become demonstrable by direct visual means during a two year interval.

Laboratory tests are not intended to estimate the amount of caries experience. They may be included in the study plan for the secondary information they may provide on the bacteriological and biochemical changes that accompany the initiation and progression of the carious lesion. Development of an accurate caries-susceptibility test should be a major objective of dental investigators. Tests of current caries-susceptibility may be useful in screening subjects for study.

The appendix includes a description of several laboratory susceptibility tests, with a review of the literature which reports comparisons of clinical and roentgenographic examination results.

Selection of Population for Study • Choice of a population appropriate for study is greatly facilitated if a preliminary investigation has determined attack rates and patterns in the groups available, and this information is required before adequate sample sizes can be estimated.

Age groups during which maximum caries activity is manifested in permanent teeth should be utilized. In general, children of school age were considered most suitable for study, since they experience high caries attack rates, have many caries-free areas susceptible and available for decay, and have relatively few restorations and missing teeth. Because natural loss of deciduous teeth complicates analysis they are often excluded in caries studies. (Studies on permanent teeth are tacitly assumed in most of the discussion presented in the brochure.) Young adults are useful when cooperation of patients is essential, or when the problem of evaluating recurrent caries is important.

The population selected should be homogeneous as regards socioeconomic and racial backgrounds. Individuals with known exposure to recognized caries-inhibitory agents should be eliminated from the study. Stability of residence should be considered. Loss of subjects during the trial is minimized when institutional children are studied; in other populations the initial groups must be large enough so that attrition will not reduce the final sample to too small a number.

Determination of Length of Trial • The length of time required for the trial may be influenced by the type of examination.

A minimum of two years was suggested by the conferees, with clinical examinations at least once a year.

Computation of Required Sample Size • Estimation of required sample size is the final step in study planning, since it must take into account all of the factors so far discussed under the general headings of preliminary investigation and study design.

In general, the sample sizes must be large enough to meet two basic requirements:

a. If a difference appears between the study and control groups at the end of the trial it should be sharp and convincing. It must be possible to demonstrate, using the statistical test around which the study has been designed, that the difference could not have occurred by chance. A difference must not be reported if, in fact, no difference exists; this mistake, in statistical terms, is Type I error.

b. If no difference appears between the study and control groups at the end of the trial, this observation should set up a strong presumption that no difference exists. A statement that the difference between two groups is not statistically significant is meaningless unless the groups were large enough to permit the assumption that a difference would have been exposed had it been present. Type II error occurs if no difference is reported when a true difference exists.

Proper sample sizes must be computed specifically for each individual study. Conditions which tend to increase required sample sizes (and the contrary to lower them) include, among others: a required high degree of validity in the result; a high proportion of immune subjects in the study, or a low attack rate; wide variability in individual degree of caries susceptibility; an expected difference of small magnitude; wide variation in response to the treatment; a high degree of examination error; and a probable low proportion of subjects available for re-examination at the end of the study period. Smaller numbers are required for a simple demonstration that a test agent has value, than are required for an accurate estimate of the magnitude of the effect; and here, the more accurate the estimate required the larger the necessary sample.

This computation must be made by a competent statistical analyst who is thoroughly familiar with the background and philosophy of the study, and who has participated at every step during study planning and design.

CONDUCT OF FIELD TRIAL

Assignment of Individuals to Study and Control Groups • As a general principle, individuals for the test must be taken from a homogeneous population, and assigned by an appropriate method to study and control groups, which are studied simultaneously and which must be comparable in all pertinent factors, such as dental and chronological age, sex, and previous caries susceptibility.

Two general methods of assignment were discussed. In one matched pairs are set up; an individual with a given set of characteristics is matched with another with similar characteristics, and the one is assigned to the study and the other to the control group by random means. In practice this plan was considered to be wasteful of effort, since a number of individuals for whom no precisely-matching partner is available must be discarded at the outset, and the one partner must be eliminated if the other fails to appear for re-examination at the end of the study. These defects were considered to outweigh the advantage of the matched-pair plan over the balanced study.

The balanced study was considered to be the method of choice. The procedure suggested involved stratification of the study population and random assignment of subgroup. In this procedure indi-

viduals available for the trial are sorted into subgroups similar in two or more outstanding characteristics (age and sex were used in the discussion presented) with assignment to study and control determined by random means in each subgroup. This yields study and control groups balanced for the characteristics used to set up the subgroups, and ordinarily (given a homogeneous population and the numbers usually required for a caries test) approximately in balance in other pertinent factors. Slight imbalance at the outset is not important, since loss of individuals during the trial period usually results in some imbalance at the end, though random assignment probably tends to assure equal loss from both groups.

Because this is a statistical problem, and because it is desirable that the examiner not know whether any individual is a study or a control subject, allocation to group is properly the responsibility of the statistical analyst.

If rigid design is used, several test groups may be studied against a single simultaneous control. Numbers required will be larger than in a single two-group study, but smaller than the total number needed in a series in which each test agent is contrasted with an individual control.

Two general principles relating to control were emphasized: there is no statistical manipulation which can compensate for an inadequate or noncomparable control, and a deficiency in control cannot be remedied by the inclusion of larger numbers of subjects.

Application of the Test Agent • The measure under test should be scrupulously and uniformly applied to the study group and as scrupulously withheld from the control group. When it is practical, test and control compounds should be administered by a member of the research team.

In testing the efficacy of a dentifrice it was held essential that toothbrushing be conducted under supervision, and that persons given a placebo should receive the same degree of supervision as those using the test substance. However, supervision may be omitted if the trial is designed to measure the practicability of the dentifrice in actual home use, rather than its effectiveness *per se*.

Other pertinent factors should be held uniform between the two groups. The vehicle for the test and placebo preparations should be the same, physiologically inert, and compatible with the substance to be tested. Both groups should use a toothbrush of the same type, and should be exposed to comparable environmental conditions during the experiment.

Criteria for Cavities • Whatever the index or type of examination used, criteria for carious lesions should be clearly stated at the outset and uniformly applied to study and control groups. The lesion should be defined at a level of objectivity which all examiners will recognize and understand. There must be agreement on items to be recorded and the manner of recording. There should be uniformity in the recording of pits and fissures which are questionably carious lesions. In the large-scale study, where a number of examiners must be used, it was considered more important to decide on a few clear-cut criteria of definite cavities than to include lesions which are questionable or extremely difficult and time-consuming to diagnose.

The criteria must permit the examination to be made with sufficient accuracy to be dependable and reproducible. In multiple-examiner studies the examination of one observer must be comparable with the examination of another. Study and control subjects should be distributed equally among the observers, and the same group of individuals should be followed throughout the study by the same examiner. If an examiner must be replaced during the trial, the new observer

should be calibrated against the examiners remaining in the study.

In single-examiner studies (recommended when incipient caries must be studied or when a small-scale trial is conducted) the examiner must be able to maintain comparability with himself throughout the course of the study.

Examining Personnel • There is no single factor which is of equal importance to that of the personnel making the examination. In the selection of examiners, every effort should be made to take into account experience, objectivity, and availability for the entire study. The examiners should be competent, meticulous, interested and scientifically honest. To eliminate the possible effect of bias, the examiner should not know whether or not the subject is in the experimental or control group.

Recording of Results • A standard routine should always be followed in recording of examination findings. While the type of chart is dependent on the material to be entered, it should provide for designation of deciduous and permanent teeth, lost and unerupted teeth, and location of the lesion. A record form used by the U. S. Public Health Service in fluoridation studies is shown in the illustration.

A capable recorder can reduce rather than increase the error of recording, increase the speed of examination, and in general make for greater efficiency in work.

Equipment • Recommended equipment includes an examination chair with an adjustable headrest, preferably one which can be raised or lowered, lighting equipment comparable to that considered necessary for dental office procedures, an adequate sterilizer, a plentiful supply of mouth mirrors and sharp explorers, and compressed air or a chip blower.

Illumination, instrumentation, and such practices as preliminary oral prophylaxis, if used, must be maintained as constant as possible throughout the study.

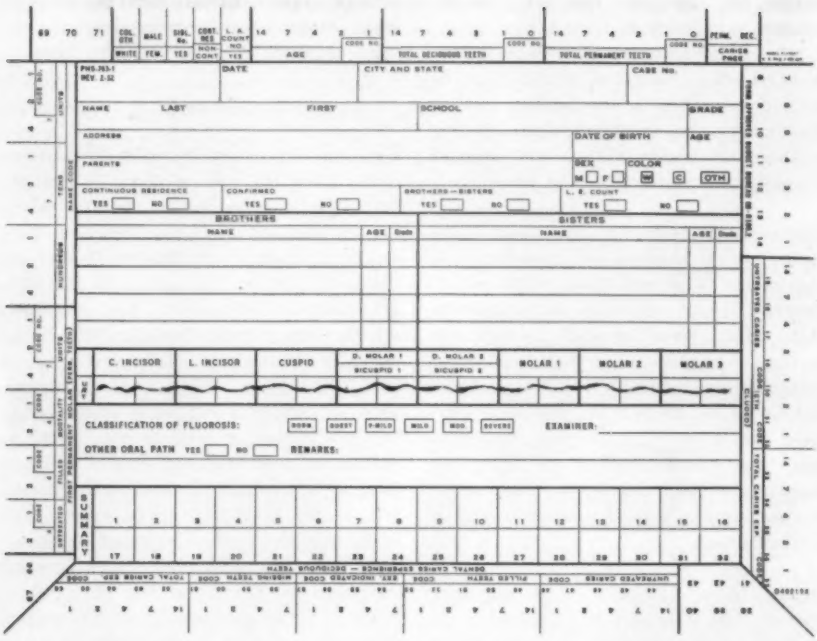
EVALUATION OF RESULTS

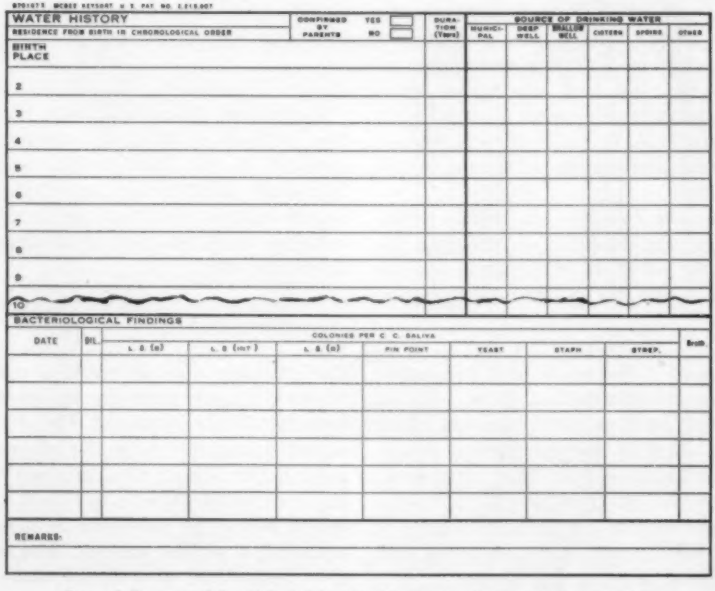
Tests to Determine Whether Conditions of the Trial Have Been Met • A final result is meaningless unless the conditions specified for the trial have been met. This requires constant supervision by the investigator during the course of the test. He should determine, for example, whether comparable cooperation is being obtained from both study and control groups. At the end of the trial the magnitude and effect of examiner error should be determined, as well as the effects of imbalance resulting from loss of subjects during the trial period. In a study carried out as described here these effects will ordinarily be small. Examiner variation is usually less important than biologic variation in the incidence of cavities. With random assignment at the outset, loss of subjects from the study group is usually compensated for by loss of subjects from the control group.

Tests to Evaluate the Results of the Trial • Evaluation of the final result is a routine matter of applying the statistical test specified in the study design, and determining whether the presumed safeguards against both types of error were sufficient under the actual conditions of the trial as run.

PUBLICATION

Publication is achieved when a report of research is made generally available in a form that can be preserved. The objective of publication is to make the information available to the greatest number of interested people; hence, a report of research should be published in a readily accessible scientific journal. The report of a clinical test of a dental caries preventive agent should be detailed enough





Record form used by U.S. Public Health Service in fluoridation studies

to enable the reader to judge whether the general principles summarized here have been observed, and should include data in sufficient detail, and in such form, that a critical reader may judge the validity of the conclusions reported.

The style of the report should be as clear, as brief, and as easy to understand as possible. Clarity is achieved largely by observance of the rules of grammatical construction. Comprehensibility is aided by logical organization, by the use of simple, correct, and consistent terms, by the use of short sentences (but not by a telegraphic style), and by the liberal use of subheadings.

Organization of the Report • The general order of presentation followed in the writing of theses is usually acceptable to journals reporting research.

The title should be brief, interesting to the reader while avoiding flippancy and interrogation, descriptive, and sufficiently informative for accurate and complete indexing by a librarian.

The introduction should present a brief, clear statement of the nature of the problem, the reasons for its investigation, and the scope and general method of the investigation. Literature reviewed and cited should be pertinent to the investigation. Methods employed, and all conditions and circumstances influencing the investigation should be described in detail.

Data should be reported in the form of tables or graphs, or both. When graphic representation facilitates interpretation, it should be employed. In general, tabular presentation is superior to graphic presentation. Statistical methods and tests which are employed should be reported, but need not be described unless they are new or modifications of standard methods. In such instances they should be described in detail.

Detailed restatement of data should be avoided in discussion. This portion of the report allows the investigator to discuss the value and significance of the findings, agreement and disagreement with earlier reports, limitations of the study, and frequently desirable additional investigations. The principal purpose of the discussion is to achieve the ultimate conclusions. The summary contains no new material but merely presents a condensation of the report.

The conclusions consist of concise statements which have been substantiated amply by the data. Conclusions drawn from one study usually do not have universal applicability and, therefore, they should be stated in terms of what happened in the specific populations studied.

USE OF THIS OUTLINE OF PROCEDURE

This material is presented as a review of experience, rather than as a dogmatic set of rules. Both the brochure itself and this summary are systematized presentations of the suggestions which appeared helpful to members of the conference. It is hoped that this material will prove to be of help in the organization and reporting of a research project, and will present a background for critical appraisal of research by students of dental caries.

BUREAU OF ECONOMIC RESEARCH AND STATISTICS

The 1956 survey of dental practice
IV. Professional expenses; auxiliary personnel

Based on the gross income of dentists as reported in the previous two chapters, it is estimated that the civilian population paid $1,600,000,000 to the 76,600 dentists in nonsalaried practice during 1955. This estimate takes into account the low rate of response from nonmembers of the Association, whose income was appreciably lower than that of members.

PROFESSIONAL EXPENSES

Of the total gross income of $1,600,000,000, dentists paid out approximately $700,000,000 in professional expenses, or 43.5 per cent of gross income.

The largest item of expense was salaries of auxiliary personnel, which accounted for 26.2 per cent of all professional expenses (Table 17). In 1952 the figure was 24.8 per cent. Next in magnitude was "commercial prosthetic laboratory charges," which amounted to $2,150 or 22.4 per cent of the average independent dentist's expenses in 1955, compared with 24.1 per cent in 1952. The mean for dental supplies and drugs was $1,415, or 14.7 per cent of all expenses. Rent averaged $1,170, or slightly less than $100 per month, and accounted for 12.2 per cent of professional expenses.

The total commercial laboratory bill in 1955 was about $160,000,000. An estimated $100,000,000 was spent for dental supplies and drugs.

Most items of expense were highest in the Far West. Average total expense in the Far West was $13,407, well above the next highest region, the Southeast, with an average of $11,324. Relatively low total expenses were reported in the Middle East ($8,231), the Northwest ($8,549) and in the Central region ($8,587).

Average rent ranged from slightly over $78 per month in the Northwest to about $128 per month in the Far West. Charges for utilities were highest in the Southwest and Southeast, probably because of the need for air conditioning. Depreciation, which depends on amount of new equipment purchased in the last ten years, was highest in the Southwest and Far West and lowest in the Central region, Middle East and New England. There was relatively little variation in cost of liability and equipment insurance by region except that the average in the Far West was well above that of other regions. Dentists in the Far West also spent most for travel to professional meetings, society dues, journals and so forth. Expenditures for dental supplies and drugs were highest in the Far West, Southeast and Southwest.

The percentages of dentists reporting various expense ratios are shown in Table 18. The expense ratio is the percentage of gross income expended for professional expenses or "overhead." More than three fourths (75.7 per cent) of all independent dentists had expense ratios between 30 per cent and 54 per cent, inclusive. Only 1.2 per cent had expenses amounting to less than 20 per cent of gross income, and 1.4 per cent had expenses of 70 per cent and up.

As shown in Table 19, half of the nonsalaried dentists reported sending more

The first three articles of this series appeared in The Journal for November and December 1956 and January 1957.

Table 17 • Mean professional expenses of independent dentists by region, 1955

Item	New England	Middle East	South-east	South-west	Central	North-west	Far West	United States	Per cent of total ex-penses	Per cent of gross income
Office rent	$1,010	$1,188	$1,124	$1,379	$1,029	$ 941	$1,534	$1,170	12.2	5.3
Utilities (electricity, gas, telephone)	368	359	395	416	319	269	379	356	3.7	1.6
Depreciation on equipment	498	472	661	790	465	539	701	554	5.8	2.5
Insurance (liability and equipment)	148	165	130	154	118	121	228	152	1.6	.7
Travel to professional meetings, society dues, journals, etc.	280	289	334	403	318	344	479	343	3.6	1.6
Commercial prosthetic laboratory charges	1,880	2,215	2,242	2,299	1,962	1,795	2,551	2,150	22.4	9.7
Dental supplies, drugs, etc. (not equipment or office supplies)	1,290	1,108	1,621	1,730	1,363	1,463	1,753	1,415	14.7	6.4
Personnel employed	2,451	1,845	2,797	3,403	2,223	2,127	3,986	2,524	26.2	11.4
Other expenses (laundry, office supplies, office maintenance, etc.)	1,203	590	810	750	790	950	1,796	949	9.8	4.3
Total	$9,128	$8,231	$10,114	$11,324	$8,587	$8,549	$13,407	$9,613	100.0	43.5

than 90 per cent of their total laboratory work to commercial dental laboratories in 1955. The median did not vary much among the seven regions; it was lowest (80.0 per cent) in the Northwest and Central states.

The proportion of all laboratory work sent to commercial laboratories is not accurately measured by the median of the percentages reported by respondents. This is true because the percentages reported by respondents varied from 90 per cent downward to zero but upward only 10 percentage points to 100 per cent, as shown in Table 20. Also, there is some tendency for dentists with a small amount of laboratory work to send it all to commercial laboratories, whereas dentists

Table 18 • Percentage distribution of independent dentists by expense ratio, 1955

Expense ratio	Per cent of dentists	Cumulative per cent
Under 20%	1.2	1.2
20%–24%	2.7	3.9
25%–29%	6.5	10.4
30%–34%	11.1	21.5
35%–39%	16.2	37.7
40%–44%	19.3	57.0
45%–49%	15.4	72.4
50%–54%	13.7	86.1
55%–59%	6.9	93.0
60%–64%	3.8	96.8
65%–69%	1.8	98.6
70%–	1.4	100.0

Table 19 • Median percentage of dentists' laboratory work sent to commercial laboratories, and estimated percentage of all laboratory work sent to commercial laboratories, by region, 1955

Region	Percentage of laboratory work sent to commercial laboratories	
	Median per-centage	Estimated per-centage of all laboratory work
New England	90.0	74.8
Middle East	90.0	77.8
Southeast	90.0	74.3
Southwest	85.0	67.6
Central	80.0	66.1
Northwest	80.0	64.8
Far West	85.0	67.0
United States	90.0	70.4

Table 20 • Percentage distribution of independent dentists by percentage of laboratory work sent to commercial laboratories in 1955

Per cent of laboratory work sent to commercial laboratories	Per cent of dentists	Cumulative per cent
0	3.0	3.0
1– 9	3.4	6.4
10–19	3.0	9.4
20–29	3.0	12.4
30–39	1.5	13.9
40–49	1.1	15.0
50–59	6.0	21.0
60–69	3.7	24.7
70–79	10.7	35.4
80–89	12.1	47.5
90–99	35.1	82.6
100	17.4	100.0

Table 21 • Percentage of dentists employing specified number and type of personnel in 1955

Type of personnel	Number of employees*			
	Part time	One	Two	Three or more
Hygienists	1.7	8.5	.1	—
Technicians	.4	3.6	.1	—
Assistants	1.2	59.5	8.5	1.5
Secretaries or receptionists	1.1	13.4	.4	—

*Employees who worked less than a full year, or who worked part time, were counted as fractions. In this table, "part time" means less than .5 employee, "one" means .5 to 1.4 employees, "two" means 1.5 to 2.4 employees, and "three or more" means 2.5 and more employees.

with a large amount of laboratory work tend to do a larger percentage of it in their offices.

The estimated percentage of all laboratory work sent to commercial laboratories is shown in Table 19. This estimate was derived by dividing the laboratory bill reported by each dentist by the percentage of laboratory work he reported as having been sent to commercial laboratories. Thus, an estimate was obtained of what the dentist's laboratory bill would have been had all of his laboratory work been sent to commercial laboratories. From these figures it was possible to estimate that 70.4 per cent of all dental laboratory work in 1955 was done by commercial laboratories, and the remaining 29.6 per cent was done in dental offices. In the Middle East, New England and Southeast, about three fourths of all laboratory work was sent to commercial laboratories, compared to about two thirds in the other four regions.

AUXILIARY PERSONNEL

A large increase occurred between 1952 and 1955 in the number of auxiliary personnel employed by dentists. The percent-

Table 22 • Percentage of independent dentists employing specified number and type of personnel, by region, 1955

No. and type of personnel*	New England	Middle East	South-east	South-west	Central	North-west	Far West	United States
No employees	22.6	40.0	17.7	16.0	22.8	17.7	11.0	22.9
One assistant	41.2	36.8	43.7	55.7	47.9	53.7	49.1	45.3
One secretary or receptionist	3.8	4.3	3.0	3.5	5.5	4.4	4.0	4.4
One assistant and one secretary or receptionist	1.9	2.1	6.9	9.1	3.3	4.4	5.4	4.1
Two assistants	4.1	3.2	5.7	8.4	4.7	3.5	8.2	5.1
One hygienist and one assistant	12.3	2.2	3.2	1.0	3.0	.5	3.5	3.2
One part time assistant	2.2	1.1	.5	0.0	1.3	1.4	.5	1.0
One technician and one assistant	6	.7	1.2	1.7	.6	.5	1.2	.9
Other	11.3	9.6	18.1	4.6	10.9	13.9	17.1	13.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

*Employees who worked less than a full year, or who worked part time, were counted as fractions. In this table, "part time" means less than .5 employee, "one" means .5 to 1.4 employees and "two" means 1.5 to 2.4 employees.

age of dentists employing full-time assistants rose from 56.5 per cent in 1952 to 69.5 per cent in 1955 (Table 21). Employment of full-time dental hygienists was reported by 6.6 per cent of independent dentists in 1952 and 8.6 per cent in 1955. The percentage of dentists employing auxiliary personnel of any type increased from 73.1 per cent in 1952 to 77.1 per cent in 1955 (Table 22).

Based on the results of the two surveys of dental practice, it is estimated that

Table 23 • Percentage distribution of independent dentists by number of chairs and number of employees of specified type in 1955

No. of chairs	No. of employees*					
	Dentists	Hygienists	Technicians	Assistants	Secretaries or receptionists	Per cent
1	0	0	0	0	0	17.6
1	0	0	0	0	Part-time	.3
1	0	0	0	0	1	2.0
1	0	0	0	Part-time	0	.7
1	0	0	0	1	0	13.9
1	0	0	0	1	1	.7
1	0	0	0	2	0	.5
1	0	0	1	0	0	.2
1	0	0	1	1	0	.2
		All other dentists with one chair				.5
2	0	0	0	0	0	4.7
2	0	0	0	0	1	2.1
2	0	0	0	Part-time	0	.7
2	0	0	0	1	0	28.5
2	0	0	0	1	Part-time	.4
2	0	0	0	1	1	2.5
2	0	0	0	2	0	3.3
2	0	0	0	2	1	.3
2	0	0	0	3	0	.3
2	0	0	1	1	0	.6
2	0	0	1	1	1	.2
2	0	Part-time	0	1	0	.5
2	0	1	0	0	0	.8
2	0	1	0	1	0	1.7
2	0	1	0	1	1	.3
2	0	1	0	2	0	.2
2	0	1	1	1	0	.2
2	1	0	0	1	0	.2
		All other dentists with two chairs				2.1
3	0	0	0	0	0	.3
3	0	0	0	0	1	.2
3	0	0	0	1	0	2.7
3	0	0	0	1	1	.8
3	0	0	0	2	0	1.0
3	0	0	0	3	0	.2
3	0	1	0	1	0	1.5
3	0	1	0	1	1	.7
3	0	1	0	2	0	.6
3	0	1	1	1	0	.2
3	1	0	0	2	0	.2
		All other dentists with three chairs				2.9
		All dentists with four or more chairs				2.5
Total						100.0

*Employees who worked less than a full year, or who worked part time, were counted as fractions. In this table, "part time" means less than .5 employee, "1" means .5 to 1.4 employees, "2" means 1.5 to 2.4 employees and "3" means 2.5 to 3.4 employees.

Table 24 • Percentage distribution of dentists' full-time auxiliary personnel by 1955 salary

Salary	Hygienists	Technicians	Assistants	Secretaries and receptionists
Less than $1,450	5.3	6.7	9.4	16.8
$1,450–$1,949	1.2	6.7	18.4	15.7
$1,950–$2,449	8.6	2.9	30.3	20.7
$2,450–$2,949	18.8	8.6	20.6	16.8
$2,950–$3,449	16.7	19.0	12.2	12.9
$3,450–$3,949	15.9	12.4	5.1	10.2
$3,950–$4,449	10.6	6.6	1.6	2.2
$4,450 and up	22.9	37.1	2.4	4.7
Total	100.0	100.0	100.0	100.0
Mean salary	$3,651	$3,807	$2,421	$2,509
Median salary	$3,500	$3,738	$2,333	$2,404

dentists employed the following number of full-time auxiliary personnel in 1952 and 1955, respectively: dental hygienists, 4,900 and 6,700; dental laboratory technicians, 3,000 and 2,900; dental assistants, 45,000 and 62,000; secretaries and receptionists, 11,600 and 10,900. The total number of auxiliary personnel increased from 64,500 in 1952 to 82,500 in 1955, an increase of 28 per cent. For the first time in history, dentists in private practice are outnumbered by their auxiliary personnel.

The proportion of dentists employing auxiliary personnel was far from uniform throughout the country (Table 22). Utilization of auxiliary personnel was most prevalent in the Far West, where only 11.0 per cent of the dentists reported no employees. At the other extreme was the Middle East, where 40.0 per cent of the dentists practiced without auxiliary personnel.

The percentage of dentists with each combination of number of chairs and number and type of employees is shown in Table 23. The most common combination was two chairs and one assistant, reported by 28.5 per cent of the respondents. Reported next most frequently was one chair and no employees (17.6 per cent) followed by one chair and one assistant (13.9 per cent).

Salaries paid to auxiliary personnel are shown in Table 24. Increases in salaries from 1952 to 1955 were as follows: hygienists, 19 per cent; technicians, 11 per cent; assistants, 13 per cent; secretaries and receptionists, 15 per cent. Technicians continued to be the highest paid auxiliaries, but by a lower margin than in 1952.

There is reason to believe that the indicated salaries for hygienists are biased downward. As shown in Table 24, 5.3 per cent of full-time hygienists were reportedly paid less than $1,450 in 1955. It is considered probable that some dentists omitted from the hygienist's salary income earned as commission, despite instructions that such income "should be regarded the same as salary." The resultant error in the national mean is believed to be less than $200.

Mean salaries of hygienists by region provide evidence that some dentists excluded income earned as commission when reporting hygienists' salaries. The mean salary reported for hygienists in the Far West was only $3,038, compared to the national mean of $3,651 and the mean for the Central region of $4,188. It is known that a very high percentage of hygienists in the Far West are paid on a commission, or part commission, basis. Salaries of other auxiliary personnel

tended to be higher in the Far West than in other regions.

Dentists who employed other dentists reported paying them an average salary of $8,924. The respondents who were employed by other dentists reported receiving an average salary of $10,392. These averages were based on rather small numbers of replies and the difference may be attributed to sampling error.

The next article of this series will present information on the size of dental offices and the types of insurance carried by dentists.

COUNCIL ON DENTAL RESEARCH

List of certified dental materials: a correction

The following should be substituted for the listing under "Certified Self-Curing Repair Resins (A.D.A. Specification No. 13)" which appeared in the January 1957 issue of THE JOURNAL:

CERTIFIED SELF-CURING REPAIR RESINS
(A.D.A. SPECIFICATION NO. 13)

Material	*Form*	*Manufacturer or distributor*
Bindit	Pink; powder-liquid	Rockland Dental Co., Inc.

Book Reviews

TECHNIQUES AND PROCEDURES OF ANESTHESIA

By John Adriani, M.D. Second edition. 568 pages with 194 illustrations. Index. $8.75. Springfield, Charles C Thomas, 1956.

This book is the second edition of a well-known anesthesia text. The contents have been completely revised and brought up-to-date so as to include much new material. The subject is discussed in the masterly fashion one has come to expect from Dr. Adriani. The contents of the book are presented in synopsis form, and a large amount of information has been concentrated in these pages. The book is profusely illustrated with pictures, tables and graphs.

Since its first edition nine years ago, this book has become a standard text for students in anesthesiology, and the new edition promises to maintain the popularity of its predecessor. It is a useful reference book also for the occasional anesthetist, including dentists who are interested in anesthesia; they will find much useful information here. Reference is greatly facilitated by a detailed table of contents and a comprehensive index. The book is well printed, in keeping with the publisher's usual standards.

J. M. Wyant

PRINCIPLES AND METHODS OF STERILIZATION

By John J. Perkins, M.S. 340 pages with 174 figures and illustrations. Index. $8. Springfield, Charles C Thomas, 1956.

The 21 chapters of this book are devoted largely to the principles and practical application of heat to the problems of sterilization. The first chapter covers the historical development of microbiology with reference to sterilization, and 18 of the next chapters are devoted to various methods of heat sterilization; of the remainder, one chapter covers chemical disinfection and one the uses of gaseous sterilization with ethylene oxide.

The material is well written; excellent detailed description is given on the use of steam and steam sterilizers as they apply to hospital problems. This makes the book of special value to operating room supervisors, central service supervisors and those involved in supervising infant formula preparation.

The figures presented are of special value as they show the details of valve controls, cross-sections of various sterilizers and layouts of departments for providing sterile equipment. Throughout the text the emphasis is placed on the use of steam, and in view of the title of this book, the discussion of chemical and other technics of sterilization are inadequate.

Sol Haberman

MICROBIOLOGY AND PATHOLOGY

By Charles F. Carter, M.D., and Alice Lorraine Smith, M.D. Sixth edition. 970 pages with 313 illustrations. Index and glossary of terms. $6.50. St. Louis, C. V. Mosby Co., 1956.

This text is distinguished by the earnest efforts of the authors to keep the book abreast of the times by the inclusion of new material and revision of previous chapters as the sciences of microbiology and pathology develop. The book is divided into three parts: microbiology, pathology and a glossary. The section devoted to microbiology is covered in the first 34 chapters; the section on pathology is presented in a systematic fashion by chapters 35 through 58.

Although the book was originally written as a combined text for schools and nursing, its enlarged scope and adequate treatment of subjects makes it useful for dental schools and schools for dental hygienists.

Sol Haberman

THE COLUMBIA ENCYCLOPEDIA

Edited by William Bridgwater and Elizabeth J. Sherwood. Second edition. 2,203 pages with a supplement of 63 plates and a record of events, 1950 to 1956. Seven tables. Thumb index. $35. New York, Columbia University Press, 1956.

Compiled and edited at Columbia University, *The Columbia Encyclopedia* is described as the only encyclopedia constructed especially for Americans. The second edition of this one-volume encyclopedia contains 10,000 more entries, a million more words and 300 more pages than the first edition which appeared in 1935. Each of the original articles has been scrutinized, pruned of outdated material, revised where necessary, and the latest available

information added. The 1956 supplement in the twelfth printing of the second edition enriches the volume with 900 drawings.

The subject matter is arranged alphabetically with guiding cross reference to related subjects. Information given under one heading generally is not repeated under another; instead the reader is directed to the item containing the information by a printed reference to that article in small capitals. Each article is written in simple language that requires no specialized knowledge of any subject. The book has separate articles on many phases of American history, politics, literature, culture, geography and America's international role.

It has separate articles on every proper name in the Bible, every incorporated place in the United States with a population of 1,000 or more and every U.S. President and Supreme Court Justice since 1908. There are articles covering thousands of species of plants and animals. The seven tables cover the following: all the languages of the world, all U.S. national parks and monuments, the elements, common abbreviations, poisons and their antidotes, weights and measures and Nobel Prize winners.

Providing basic information for the general reader, *The Columbia Encyclopedia* is recommended for the home, office and library. It should be most useful around an editorial office. The articles appear authoritative, succinct, well written, objective and up-to-date.

The book is handsomely and durably bound. In typography and other physical details it is compact. It should stand up under the handling that such a helpful reference work must endure.

N. C. Hudson

PROCEEDINGS WORLD CONGRESS OF ANESTHESIOLOGISTS CONDUCTED AT THE NETHERLANDS, SEPT. 5-10, 1955

Edited by International Anesthesia Research Society. 321 pages with illustrations. Minneapolis, Burgess Publishing Co., 1956.

This volume contains 114 brief abstracts presented by members and representatives of 44 countries of the World Congress of Anesthesiologists meeting. Many of the abstracts deal with hypothermia, controlled hypotension, hemodynamics during surgery, artificial hibernation, curare drugs and new intravenous drugs. Some of the abstracts review experiences and research of individual anesthetists, and six concern status and teaching of anesthesiology.

The proceedings are edited, and abstracts presented in French and German have been translated into English. Most of the abstracts have charts and diagrams and have a conclusion or summary with references listed.

The contents are of primary interest to the anesthesiologist. The oral surgeon would be interested in the report of experimental data concerning the modification of local anesthesia by surface active agents and the reports of Nisentil-Lorfan combinations as a supplement to nitrous oxide-oxygen anesthesia.

This volume is a supplement to information reported in anesthesiology literature.

John T. Geneczko

FRACTURES OF THE FACIAL SKELETON

By N. L. Rowe, F.D.S., R.C.S. (Eng.), and H. C. Killey, F.D.S., R.C.S. (Eng.). 923 pages with 1,231 illustrations, 14 in color. Index. $22. Baltimore, Williams & Wilkins Co., 1955.

The authors of this book have been in a unique position to deal with a large number of facial fractures and injuries and have had the opportunity to evaluate the results of the various methods as they are carried out in the British Isles. This, and the fact that there are eight well-known contributors to their book, all in important maxillofacial centers in England and Scotland, suggest that this publication sets forth the predominant opinions on the subject held in these areas.

The book is large, and the object of the authors is stated in the preface. "This book has been written with the object of providing a comprehensive textbook on fractures of the facial skeleton which endeavours to present the subject matter in a manner acceptable to the orthopaedic surgeon, dental surgeon and the specialist in maxillofacial surgery." The contents of the book are well arranged and in such a manner that it is an admirable reference book. It is easy to read, and the quality of the English used throughout the book is exceptional.

There is a logical division of the subject matter into (1) fractures of the mandible, (2) fractures of the middle third of the facial skeleton, (3) gunshot wounds. An interesting discussion follows of the historical background of the treatment of maxillofacial injuries beginning in the pre-Christian era. The number of illustrations is unusual, and the exactness with which they illustrate the subject matter is commendable.

It seems that many British books written on this subject in the past have given more space to the description of the construction of cast

metal cap splints than might be compatible with the methods of fixation most commonly used in this country. In this publication, this is not true. All methods in common use are adequately treated and evaluated. Methods used in placing interdental wires are thoroughly discussed and well illustrated.

The comprehensiveness and the clarity with which the book is written should recommend it highly as a source of reference.

Warren R. Schram

TEACHER'S SUPPLEMENTARY REVIEW FOR USE WITH DENTISTRY IN PUBLIC HEALTH

By Walter J. Pelton, D.D.S., M.S.P.H., and J. M. Wisan, D.D.S., M.S.P.H. Second edition. 42 pages. Philadelphia, W. B. Saunders Co., 1956.

Dean Gerald D. Timmons, of Temple University School of Dentistry, in a foreword suggests that the *Review* should contribute to both integrated and specialized courses in public health dentistry.

The book to which this review refers was published in 1955; the first edition appeared in 1949 as the result of efforts of the dental health section of the American Public Health Association.

The ten chapters in the 1955 edition deal with the following topics: What is public health?, surveys and evaluation of dental programs, elements of statistical methods, dental needs and resources, prevention and control of dental caries, prevention and control of other dental diseases, administrative principles in dental public health, the practice of dental public health, dental health education and payment for dental services.

The review lists questions for each chapter which the teacher may ask of the students and lists 15 pages of suggestions for multiple-choice questions.

N. C. Hudson

TEXTBOOK ON PERIODONTAL THERAPY

By Henry M. Goldman, D.M.D., Saul Schluger, D.D.S., and Lewis Fox, D.D.S. 565 pages with 190 illustrations and 100 plates. Index. $18.75. St. Louis, C. V. Mosby Co., 1956.

The 23 chapters of this book, as the authors have stated, are "devoted exclusively to periodontal therapy and case management." This treatment is somewhat of a departure in periodontology where a thorough knowledge of histopathologic changes is necessary to formulate therapy properly. The almost total absence of histopathologic correlation makes the book unsuitable for use as a teaching text. However, as a practical book for the clinician, the work is excellent.

The need for a critical evaluation of the many technics in periodontal therapy is of acknowledged importance, and the authors are to be commended for the way in which this has been accomplished. Organization of the material is excellent. The book begins with diagnosis, carries the reader through the many phases and facets of treatment to the maintenance phase.

One is impressed with the realistic manner in which this complex subject is considered and presented. Most of the unsubstantiated data which abounds in this field are placed in their proper perspective. This handling of the material is deserving of special mention.

The illustrations are adequate, well chosen and well produced. Some of the roentgenograms have lost detail in reproduction, a serious deficiency in a text where they are of paramount importance. The drawings are excellent and being correlated, for the most part, with actual clinical situations, their value is further enhanced.

The publisher has designed a most attractive and readable book. The type, size, paper and binding are superb.

There can be no doubt as to the value of the work, and it can be unhesitatingly recommended for the clinician. The authority with which the authors speak assures coverage of technical details in a practical and competent manner.

Joseph L. Bernier

BIBLIOGRAPHY OF MEDICAL REVIEWS: 1955

Edited by Seymour I. Taine for the Armed Forces Medical Library. 74 pages. Washington, D. C., U. S. Government Printing Office, 1956.

In recent years there has been a gradual increase in the review type of article in science in general and medicine in particular. The review article follows the abstract journal as a means of helping the practitioner keep up with advances in his field. Reviews vary in length from a few pages to hundreds of pages. The average review constitutes a survey of the latest advances in a specific field.

The present publication came into being when the Armed Forces Medical Library decided to compile the bibliography as a by-product of its *Current List of Medical Literature* operation.

The bibliography covers about 350 publications, of which only seven are dental journals. Reviews are listed in the fields of clinical and experimental medicine and the allied biomedical fields such as dentistry (13 articles), pharmacy, nursing and psychology. The reviews are grouped alphabetically by subject headings. All the articles selected appeared in 1955 issues of periodicals.

"This initial effort," says the editor in a preface, "serves generally as a trial balloon, and comments on all aspects of the venture are earnestly solicited."

The concept behind the bibliography is sound, but if an annual bibliography of reviews were to cover all fields of medicine thoroughly, it would have to be much larger than this initial work. The volume's coverage of dental review literature is so meager as to be all but valueless.

The material is arranged for easy reference. It is printed by the photo-offset method in a pleasing style and bound in soft covers.

N. C. Hudson

CEREBRAL PALSY—ADVANCES IN UNDERSTANDING AND CARE

By Viola E. Cardwell, R.N., P.T., M.A. 625 pages with 81 illustrations. Index. Appendix. $5. New York City, Association for the Aid of Crippled Children.

Written with the aim of being a source of benefit for both the best informed and the least well informed persons interested in the subject of cerebral palsy, this book in its excellent presentation of data fulfills that dual purpose. Part of the book is so technical that it will be understood only by specialists in medicine, neurology, anatomy and physiology. Part of it deals with social aspects of the subject at a level of value to the trained social worker or psychologist and part deals with parental problems, the suggestions regarding which are easily understood by interested lay persons.

Since the book combines all these approaches, it obviously is not intended for hurried, one-time reading. Rather, it should serve as a splendid reference for the professionally trained and the laity. Its three divisions, its well ordered 26 chapters, its comprehensive index as well as its easily readable print and numerous illustrations all combine to facilitate its use.

Particularly notable is the book's coverage of developments in cerebral palsy during the last five to ten years. Among such developments is that of dental care for those handicapped with one or another type of the cerebral palsies. Naturally, inasmuch as dental needs of the cerebral palsied largely parallel those of the nonhandicapped, the discussion centers on preventive measures and the methodology of rendering care. The space devoted to dental health care and the references cited on the subject denote the rapidly developing interest in this part of the cerebral palsy problem and points up the necessity for even more widespread interest on the part of the dental profession.

Richard C. Leonard

DENTAL CARIES IN NEW ZEALAND

By R. E. T. Hewat and D. F. Eastcott. 133 pages with 16 tables and 20 charts. Appendixes. New Zealand, Medical Research Council of New Zealand and J. W. Baty, Ltd., 1956.

This book is a report of an extensive survey carried out to determine variations in the incidence of dental decay in certain population groups in New Zealand. The conclusions are based on an examination of more than 14,000 European and 7,000 Maori children. The caries observations are correlated with a variety of oral conditions and with race, geography, soil, water, sunshine, rainfall and urban or rural residence. The material is well organized and easily read; clear tables and charts summarize the observations. When indicated, figures are subjected to statistical evaluation.

For various reasons many of the observations are inconclusive, but a number of them will have value to students of dental caries. Among these can be noted the lower caries incidence in Maoris and correlations between caries and different tooth stains. Of particular interest are tentative relationships between caries and soil types and charts showing caries figures according to age for different tooth surfaces in European and Maori girls and boys.

Basil G. Bibby

KENNY VISITS THE HOSPITAL

By Julia Ann Bartosh, R.N. 62 pages with 104 illustrations. $2.50. New York, Exposition Press, 1956.

What happens when a child enters the hospital for the first time? This book, written by a registered nurse, presents a pictorial study with simply written explanations of a little boy's hospital experiences from admission to discharge.

For the most part, the book presents a true

picture of the experiences most likely to be met by either child or adult in one of our modern hospitals. It is doubtful, however, that any child would be given the "grand tour," such as was Kenny's good fortune, and the child who reads this book may feel cheated when such a tour is not included in his hospital experience. However, the author's use of this method of presentation may make the child aware of most hospital procedures and equipment.

The book should prove of value to parents, teachers and others concerned with child instruction. By showing a true picture of hospital life, the book does much to alleviate a fear of the unknown which makes hospital adjustment unnecessarily difficult.

Shirley Burris

LES PARODONTOPATHIES (PERIODONTAL DISEASES)

Edited by the Commission for Communications and Minutes of the Fourteenth Congress for Research on Periodontal Disease of the ARPA Internationale, Venice, September 5-11, 1955. 386 pages with 140 illustrations. Index and bibliographies. Venice, Tipografia Luigi Salvagno, 1955.

This report of the Fourteenth Congress of the ARPA Internationale was prepared by 64 contributors from Argentina, Austria, Denmark, England, France, Germany, Italy, Netherlands, Norway, Sweden, Switzerland and the United States. Each author, in his native language, wrote on the subject in which he was especially interested. Summaries in English, French, Italian and German accompany each contribution.

Because there are so many authors, there appears to be some unevenness in presentation. Some of the articles seem to be too long and others too short. Nearly all the contributors are outstanding authorities and, therefore, their articles contain valuable and practical information. It is difficult and probably unfair to select one or more of the 53 contributions as the outstanding articles, but nearly all the speeches by American authors reflect the high standards of American dentistry.

There are numerous reproductions of roentgenograms and micrograms accompanying the contributions.

The paper is sturdy, but the book is inadequately bound.

The ARPA Internationale can be congratulated for having published another superior volume dealing with the progress in diagnosing and treating periodontal diseases.

Paul H. Glucksman

A MANUAL OF ORAL SURGERY: A STEP-BY-STEP ATLAS OF OPERATIVE TECHNIQUES

By W. Harry Archer, D.D.S. Second edition. 877 pages with 1,400 illustrations. Index. $16.50. Philadelphia, W. B. Saunders Co., 1956.

As indicated by the title, the 29 chapters of this book apparently were written to serve as a practical guide for those doing oral surgery. The book provides a step-by-step outline of operative technics. The subject of oral surgery is comprehensively covered, but only insofar as the prime objective of the book is carried out does it represent a contribution to dental literature.

Starting with minor intraoral operations, the book goes on to deal, in broad generalities, with plastic procedures, management of malignancies and cervical metastases and oral prosthesis.

Those technics having to do with ordinary oral surgical procedures—for example, the removal of teeth and associated complications, apicoectomy, cysts of the oral cavity and fractures—are adequately depicted by excellent diagrammatic illustrations and well-integrated text. For these specific technics, the practitioner or student will find the book an asset.

There is much material presented, however, which deviates from the book's purpose. Chapters dealing with antibiotics, infection, the dentist's responsibility in malignancy, radiation therapy, pain and legal aspects of oral surgery are informative and well written but properly do not belong in a manual supposedly confined to a step-by-step description of technics. Further, the inclusion of a large number of case reports, although intended to afford practical illustrations of the text material, appears superfluous for this type of book.

Eleven contributors add to the value and prestige of the publication. Such distinguished contributors to dental literature as Cloyd S. Harkins, Hamilton B. G. Robinson and Harry Sicher have written the chapters having to do with their fields of special interest, and, as anticipated, these chapters are easily read and contain much valuable information. Here, too, however, the reader who believes he has a book devoted to operative technic may be disappointed.

Careful scrutiny reveals a few instances of what may be considered, on the part of some authorities, as erroneous information or poor surgical judgment. Notwithstanding, this book, in general, can be regarded as a well prepared, logically organized, highly readable oral surgery text, and most general practitioners of dentistry, oral surgeons and physicians will find it a worthwhile addition to their library.

Herbert J. Bloom

Current Literature

DIFFERENTIAL DIAGNOSIS OF FIBROUS DYSPLASIA AND FIBRO-OSSEOUS NEOPLASTIC LESIONS OF THE JAWS AND THEIR TREATMENT

Kurt H. Thoma. J. Oral Surg. 14:185 July 1956.

Fibrous dysplasia is difficult to distinguish from ossifying fibroma or fibro-osteoma. In the former, the entire bone or a great part of it may be involved. The condition is due to faulty osteogenesis. In the latter, the young connective tissue cells, which are the ancestors of the osteoblast as well as of the cementoblast, form a neoplasm that develops in the jaw and causes localized expansion. The clinical observations interpreted by means of roentgenograms furnish the best basis for a differential diagnosis. The pathologic examination is of little help, since in both diseases various stages of cell differentiation and different types and amounts of intercellular substances—collagen, osteoid and bone—are seen.

In fibrous dysplasia, the surgical treatment should be restricted to the obtaining of a good cosmetic result. The neoplastic lesion should be totally excised at the earliest possible time. References to reports of transformation of fibrodysplastic lesions into osteosarcomas are given. Such instances present additional proof of the neoplastic nature of fibro-osteomas.

FACIAL PAIN

C. Dean Couch, Jr. J. Oral Surg. 14:216 July 1956.

It behooves the dentist to have a broad knowledge of the various causes of facial pain, as well as an understanding of nerve distribution in the face and the pathologic physiology of pain in this region. The somatic and visceral components of the nervous system participate in supplying the organs of the head and neck, and on anatomic grounds alone the evaluation of facial pain offers considerable complexity.

All healthy individuals have approximately the same capacity for perceiving pain; however, the threshold for reaction to pain may vary widely in the same individual from day to day and under different circumstances. A patient's pain must never be classified as psychogenic until every possible organic cause has been eliminated. If a patient does have psychogenic pain, the condition demands careful evaluation and proper treatment equal to that accorded organic pain.

Symptomatic facial pain is discussed under the following headings: (1) pain originating from oral conditions—including pulpitis, denture trauma, localized alveolar osteitis, impacted teeth, burning tongue and other pathoses, (2) disease of the temporomandibular joint, (3) sinus pain, (4) pain as a manifestation of cerebral disease—including tumors, aneurysms, multiple sclerosis and syringobulbia, (5) pain as a manifestation of systemic disease—including syphilis, thyroid deficiency, allergy, herpes zoster and herpes simplex, (6) otalgia and (7) elongated styloid process.

Idiopathic facial pain is discussed under the following headings: (1) trigeminal neuralgia, (2) glossopharyngeal neuralgia, (3) sphenopalatine neuralgia, (4) buccal neuralgia, (5) atypical neuralgia, (6) facial neuralgia and (7) vagus neuralgia.

LINGUAL NERVE NEUROPATHY RESULTING FROM SIALOLITHIASIS

Donald E. Cooksey. J. Oral Surg. 14:240 July 1956.

A patient had a salivary stone removed from the duct of the submaxillary gland by a transoral approach. After surgery, the patient developed severe pain and tingling in the side of the tongue, the floor of the mouth and the lingual mucosa. The submaxillary salivary gland became firm, tender and nodular.

Examination, including sialograms, revealed only a stricture in the salivary duct. The difficulty was diagnosed as retrograde infection due to stenosis of the duct after surgery. The lingual symptoms were regarded as dramatization of the problem by an overly emotional patient.

Treatment, consisting of antibiotics and medicated oil, produced remission, but the symptoms returned, and the gland was surgically removed. At operation, the lingual nerve was found to be firmly embedded in the fibrous scar and was freed and returned to its normal position. The patient recovered rapidly and is free of complaints.

The possibility of the embedded nerve had not been considered in the preoperative diag-

nosis and, by good fortune, was discovered at surgery. The obvious anatomic and physiologic factors were minimized because of psychic factors, a situation which emphasizes the need for careful and painstaking evaluation of clinical symptoms prior to their dismissal as psychic complaints.

TREATMENT OF PERSISTENT INFECTION OF THE FACE AND NECK

Daniel Verne. J. Oral Surg. 14:249 July 1956.

Infections of the head and neck which result from dental disease are bizarre and, in many instances, difficult to eliminate. In one instance, it took eight months of intermittent surgery and chemotherapy to eliminate completely all signs of infection. Incision and drainage and the use of antibiotics seemed to hold the infection temporarily, only to have it recur at a later date.

The patient was an undernourished woman of 60 who complained of pain and swelling of the left side of the face. The teeth were suffering from extreme periodontal disease. The patient had first noticed swelling in the maxillary region on the left side 14 weeks prior to her first visit. Later, the swelling moved down in a mandibular direction, and it became difficult for the patient to separate her jaws. About one week before the patient was seen, an opening appeared on the left cheek just anterior to the masseter muscle, and suppurative material drained spontaneously from this point.

Penicillin was administered intramuscularly, and the first operation consisted of incision and drainage of the masticator space. The patient was well for a short period of time. Then an abscess formed behind the ear, and it was necessary to incise and drain the abscess by means of an incision behind the ear and one in the temporal region. A through and through drain was placed in this region. Roentgenograms of the mandible and maxilla did not reveal osteomyelitis.

A third operation was necessary shortly after the second because the original symptoms again appeared with definite suppurative material in the masticator space. A through and through drain was placed from the temporal region to the inferior border of the mandible by passing a rubber drain beneath the zygomatic ridge.

Four months after the removal of the third drain, it was necessary to perform a fourth operation to relieve the accumulation of suppurative material in the masticator space. Again a through and through drain was placed from the temporal region to the mandible. The mandibular left impacted third molar was removed at this time, but it was not felt that this tooth was the cause of the infection.

Penicillin therapy was instituted and continued throughout the four operations. One month after the fourth operation a fifth procedure was necessary, and again a through and through drain was placed from the temporal region to the mandible underneath the zygomatic ridge. This rubber drain was replaced with a perforated rubber drain and 200,000 units of penicillin in 100 cc. of distilled water was allowed to drip through the wound. This was accomplished by placing the penicillin in an intravenous bottle. The tubing from the bottle ran to the temporal opening of the drain. The solution was allowed to drip through the drain and empty out of the submaxillary opening at a very slow rate. The procedure was repeated every day for three days until the drain was accidentally removed.

The patient recovered uneventfully, and eight months after the patient's first visit, the sedimentation rate finally dropped to 34 mm. on the first hour and 64 mm. on the second hour. The patient was discharged from the hospital with complete resolution of swelling, and to the date of writing, which is eight years after the final operation, there has been no recurrence of the infection.

Infections of the head and neck are dangerous and require careful treatment. A knowledge of the anatomy of the facial planes and synergistic treatment with antibiotics is necessary.

SURGICAL TREATMENT OF BENIGN HARD TISSUE LESIONS OF THE ORAL CAVITY

Henry B. Clark, Jr. J. Oral Surg. 14:277 Oct. 1956.

The hard tissue lesions occurring in and about the jaws which may require surgical treatment may be derived from bone or from any of the elements of tooth-forming tissue. For surgical purposes they may be classified according to their location: peripheral, partially buried or central. Establishment of a pathologic diagnosis is important, but a preoperative biopsy is seldom done in such instances, since clinical and roentgenographic evidence are usually sufficient to make a preliminary diagnosis. Whenever malignant or systemic disease is suspected, a biopsy specimen should be taken first.

The surgical care of benign hard tissue lesions is best performed by raising a large muco-

periosteal flap, then dealing with the lesion with effective bone cutting instruments such as mallet and chisel, surgical bur and rongeur forceps. Wounds resulting from removal of surface growths and from small central lesions require no packs or drains and may be closed with interrupted silk sutures. The defects remaining after removal of large central lesions are best handled by repeated changes of gauze dressings, so that the cavity may fill in by granulation. Large, ill defined lesions such as condensing osteitis and complex odontomas without a well defined capsule should be left undisturbed unless they are causing symptoms.

GENERAL ANESTHESIA IN DENTAL OFFICE PRACTICE

Harry M. Seldin. J. Oral Surg. 14:288 Oct. 1956.

General anesthesia for dental office procedures is an integral part of the practice of dentistry. The patient with cerebral palsy, the spastic patient, the frightened child and the adult emotionally unprepared for dentistry are best treated while under general anesthesia. More than 90 per cent of all oral surgeons routinely employ general anesthesia in their offices. General anesthesia in the dental office must be administered by thoroughly trained personnel, dentist or nurse, whose sole function is the maintenance of the patient in a satisfactory and safe anesthetic state.

In the choice of an anesthetic agent and technic the safety and comfort of the patient must be considered. A preanesthetic evaluation of the patient should be made.

For short procedures, nitrous oxide-oxygen properly administered in the light plane produces unconsciousness and amnesia without postanesthetic depression. For more extensive surgery and other prolonged dental procedures in the dental office, controlled intravenous premedication with thiopental sodium and light nitrous oxide-oxygen anesthesia provides the patient safe and pleasant sleep devoid of severe hypoxia and postanesthetic depression. Deep planes of thiopental sodium anesthesia are dangerous and should be avoided.

CLINICAL RESEARCH AND THE GENERAL DENTAL PRACTITIONER

Austin H. Kutscher. New York D. J. 21: 495 Dec. 1955.

There is some disagreement as to whether the general practitioner of dentistry should engage in clinical research. A program of clinical research commensurate with the background of the general practitioner is described in detail. It requires suitable study of research methods and research programs in general.

Since good researchers do not just happen, the training of the researcher-general dental practitioner should begin in the dental school. Unfortunately, it generally does not. Provision should be made for the student to undertake research as partial fulfillment of his requirements for the dental degree.

A convenient and inexpensive series of basic science review courses perhaps entitled "Biological Principles of Dentistry" should be made available within the scope of dental society activity. General practitioners have a right to look to the dental society for guidance in research projects. A society committee on research might sponsor studies performed by the membership en masse with observations evaluated by a smaller group of more experienced researchers; for example, a study might be made of the relative efficacy of various local anesthetic agents determined under controlled double blind conditions. The observations from such a study could easily be at significant clinical and statistical variance with studies performed by trained researchers. A program might also be directed toward encouraging the small team study. An unending series of problems await this more particularized approach.

Selected forms for recording observations dealing with typical problems should be published as guides. Society sponsored courses on the principles and conduct of research should be inaugurated and run in conjunction with a course on the principles of writing for scientific literature.

Opportunity to publish valid observations in reputable journals must be afforded the researcher, as is done in the "Original Brief Research Report Section" of the *New York State Dental Journal.*

Deaths

Antonieski, Eugene P., Philadelphia; Temple University, School of Dentistry, 1953; died June 13; aged 33.

Baldwin, Alva L., Cleveland; Western Reserve University College of Dentistry, 1923; died June 24; aged 56.

Berglind, Harry R., New York; College of Dental and Oral Surgery, New York, 1918; died June 20, 1956; aged 62.

Bludau, Albert L., Cincinnati; Ohio College of Dental Surgery, University of Cincinnati, 1918; died June 12; aged 59.

Blumenthal, Isadore, Passaic, N. J.; College of Dental and Oral Surgery, New York, 1914; died June 20; aged 63.

Burke, Michael R., Cohoes, N. Y.; University of Pennsylvania, School of Dentistry, 1906; died June 15; aged 74.

Burke, Samuel J., Boston; Tufts University, School of Dental Medicine, 1914; died May 28; aged 62.

Cevely, Harry F., Wichita, Kan.; Western Dental College, Kansas City, 1907; died June 12; aged 75.

Childs, Henry M., Rockaway Beach, N. Y.; Baltimore College of Dental Surgery, 1907; died June 11; aged 80.

Clark, George R., Detroit; University of Michigan, School of Dentistry, 1908; died June 26; aged 72.

Coffin, Duane S., Los Angeles; University of Southern California, College of Dentistry, 1913; died July 2; aged 65.

Cutler, Earle V., Osage, Iowa; University of Iowa, College of Dentistry, 1904; died June 17; aged 75.

Dawes, Franklin E., Boston; Harvard University Dental School, 1899; died April 9; aged 82.

Denison, George H., Hanna, Ind.; Chicago College of Dental Surgery, Loyola University, 1894; died June 14; aged 89.

Dickman, Herman J., Jr., Albany, N. Y.; University of Pennsylvania School of Dentistry, 1924; died June 3; aged 55.

Eiteljorg, Albert F., Indianapolis; Indiana Dental College, 1896; died June 17; aged 88.

Engstrom, Carl O., Santa Cruz, Calif.; University of Southern California, College of Dentistry, 1907; died June 30; aged 72.

Farrell, Joseph W., Pittsfield, Mass.; Starling-Ohio Medical College, Department of Dentistry, 1911; died June 19; aged 69.

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Fishman, Mary, New York; New York Dental School, 1899; died June 14; aged 79.

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Gallagher, James U., Detroit; University of Michigan College of Dental Surgery, 1910; died April 1956; aged 82.

Garnes, Hasel W., Columbus, Ohio; Howard University, College of Dentistry, 1918; died June 20, 1956; aged 60.

George, William D., Bentleyville, Pa.; University of Pittsburgh, School of Dentistry, 1928; died June 28; aged 51.

Geraghty, Thomas P., Wassaic, N. Y.; Columbia University, School of Dental and Oral Surgery, 1940; died June 22; aged 41.

Graves, Charles W., Jr., Nashville, Tenn.; St. Louis University, School of Dentistry, 1946; died June 17; aged 33.

Greenberg, Bernard, Philadelphia; Temple University, School of Dentistry, 1932; died June 29; aged 45.

Hawley, Henry G., Broadalbin, N. Y.; Baltimore College of Dental Surgery, University of Maryland, 1899; died June 14; aged 81.

Hunt, Loren T., Lincoln, Neb.; Lincoln Dental College of Cotner University, 1915; died June 16; aged 62.

Jacobs, Harry A., Chicago; Chicago College of Dental Surgery, Loyola University, 1919; died July 15; aged 66.

Johnston, James F., Jr., Galveston, Texas; Tulane University, School of Dentistry, 1923; died May 26; aged 57.

Kaemmerer, Henry A., West Englewood, N. J.; College of Dental and Oral Surgery, New York, 1907; died June 25; aged 70.

Kahaleanu, John K., Honolulu, Territory of Hawaii; University of Southern California, College of Dentistry, 1925; died June 25; aged 56.

Kaplan, Elias, Rockaway Park, N. Y.; New York College of Dentistry, 1913; died April 7; aged 77.

Kendall, Charles H., Milwaukee; Northwestern University Dental School, 1919; died June 11; aged 64.

Kirkpatrick, Frederick K., Prichard, Ala.; University of Minnesota, College of Dentistry, 1918; died April 6; aged 63.

Kossow, Moses I., New York; New York College of Dentistry, 1913; died April 13.

Krajicek, Benjamin E., Scribner, Neb.; Lincoln Dental College of Cotner University, 1917; died June 11, 1956; aged 61.

Langsdon, Hal A., Yorktown, Ind.; Indiana Dental College, 1924; died June 20; aged 54.

Lindsay, Elmer A., New York; New York College of Dentistry, 1909; died February 24; aged 69.

Loeb, Virgil, St. Louis; St. Louis University, School of Dentistry, 1906; died June 26; aged 73.

Lyte, Harvey W., Allentown, Pa.; University of Pennsylvania School of Dentistry, 1898; died August 18, 1956; aged 83.

Machen, Charles C., Chicago; Meharry Medical College, Dental Department, 1919; died September 1, 1956; aged 66.

Mackin, Charles E., Shamokin, Pa.; University of Pennsylvania School of Dentistry, 1921; died June 23; aged 57.

Main, Miles M., Ishpeming, Mich.; University of Michigan College of Dental Surgery, 1908; died May 9, 1956; aged 70.

Marchant, John H., Ellicott City, Md.; Baltimore College of Dental Surgery, Dental School, University of Maryland, 1891; died July 3.

Marple, Horace H., Silver Spring, Md.; Atlanta-Southern Dental College, 1943; died September 1956; aged 40.

Marquardt, Alfred H., Brookfield, Wis.; Marquette University Dental School, 1925; died August 22, 1956; aged 56.

Marr, Emmet E., Hastings, Neb.; Kansas City Dental College, 1915; died April 10, 1956; aged 72.

McArthur, William B., Palm Springs, Calif.; North Pacific College of Oregon, School of Dentistry, Portland, 1928; died April 28; aged 66.

McAuley, Frank C., Seattle; Chicago College of Dental Surgery, Loyola University, 1913; died July 19, 1956; aged 74.

McDonald, Thomas M., Wolfe City, Texas; University of Tennessee, College of Dentistry, 1904; died June 2; aged 77.

McEvoy, Walter G., Fairfax, Calif.; College of Physicians and Surgeons, San Francisco, 1950; died July 4, 1956; aged 38.

McGaughy, William O., Nettleton, Miss.; died February 7, 1956; aged 87.

McGrory, Thomas G., Chicago; Chicago College of Dental Surgery, Loyola University, 1901; died March 3, 1956; aged 76.

McMullen, Edgar A., Anderson, Ind.; Indiana Dental College, 1910; died May 1956; aged 70.

McNutt, Nathan B., Houston, Texas; Texas Dental College, Houston, 1918; died June 22; aged 64.

Meador, James R., Reidsville, N. C.; Baltimore College of Dental Surgery, University of Maryland, 1906; died July 12, 1956; aged 74.

Merchant, Thomas P., Los Angeles; Northwestern University Dental School, 1907; died September 30, 1956; aged 74.

Mielcarek, Adam, Buffalo; Baltimore College of Dental Surgery, University of Maryland, 1918; died June 15; aged 65.

Mierley, Oscar M., Huntingdon, Pa.; University of Pennsylvania School of Dentistry, 1916; died July 1, 1956; aged 62.

Millen, James D., Winona, Minn.; died September 17, 1956; aged 94.

Miller, Harry, Cincinnati; Ohio College of Dental Surgery, University of Cincinnati, 1905; died August 30, 1956; aged 75.

Miller, Arden T., Kansas City, Mo.; graduated 1915; died July 26, 1956; aged 73.

Miller, Carl E., Oceanside, Calif.; North Pacific College of Oregon School of Dentistry, Portland, 1918; died July 23, 1956; aged 64.

Miller, Morris A., Kearney, N. J.; College of Jersey City Department of Dentistry, 1917; died August 13, 1956; aged 62.

Mims, Robert F., Fairfield, Ala.; Vanderbilt University School of Dentistry, 1919; died March 6, 1956; aged 59.

Minerick, Andrew J., Philadelphia; Temple University School of Dentistry, 1934; died August 22, 1956; aged 54.

Mitchell, Fred W., La Mesa, Calif.; University of Southern California College of Dentistry, 1911; died July 26, 1956; aged 72.

Mittun, Carl J., Minneapolis; University of Minnesota College of Dentistry, 1925; died April 26, 1956; aged 54.

Mizell, Daniel B., Charlotte, N. C.; Baltimore College of Dental Surgery, University of Maryland, 1919; died May 16, 1956; aged 58.

Molpus, John K., Daytona Beach, Fla.; Atlanta Dental College, 1910; died August 2, 1956; aged 70.

Monahan, Thomas P., Grants Pass, Ore.; University of Oregon School of Dentistry, 1948; died August 9, 1956; aged 36.

Montgomery, James A., St. Louis; St. Louis University School of Dentistry, 1912; died September 1, 1956; aged 69.

Moore, Henry A., Elmira, N. Y.; Philadelphia Dental College, 1890; died September 10, 1956; aged 92.

Morton, Clarence E., Denison, Iowa; Temple University, School of Dentistry, 1913; died June 14; aged 58.

Morris, Edna Judge, Cincinnati; Cincinnati College of Dental Surgery, 1916; died August 13, 1956; aged 64.

Mosquitz, Louis, Philadelphia; Pennsylvania College of Dental Surgery, Philadelphia, 1907; died September 24, 1956; aged 71.

Mowry, Charles N., Fremont, Ohio; Ohio Medical University College of Dentistry, 1905; died June 29; aged 77.

Munday, Franklin K., Seattle; Kansas City Dental College, 1895; died August 16, 1956; aged 84.

Murphy, Humphrey F., La Jolla, Calif.; Creighton University College of Dentistry, 1919; died March 31, 1956; aged 68.

Murphy, Maxwell C., Temple, Texas; Northwestern University Dental School, 1921; died June 19.

Murray, Bernard C., Porterville, Calif.; University of California, College of Dentistry, 1912; died July 2, 1956; aged 69.

Nastasia, James E., Long Branch, N. J.; Tufts University, School of Dental Medicine, 1916; died July 6; aged 63.

Newman, David, New York; New York College of Dentistry, 1924; died May 7, 1956; aged 56.

Niditch, Samuel, Brooklyn; Western Reserve University College of Dentistry, 1941; died September 16, 1956; aged 40.

Nix, Harvey M., Maplesville, Ala.; Vanderbilt University School of Dentistry, 1909; died July 11, 1956; aged 69.

Noland, Otto A., Bloomington, Ind.; St. Louis University School of Dentistry, 1916; died September 11, 1956; aged 66.

Nordstrom, James B., Ashland, Ohio; Ohio State University, College of Dentistry, 1950; died June 23; aged 30.

Norton, Thomas A., Rutland, Vt.; Baltimore College of Dental Surgery, University of Maryland, 1922; died July 1, 1956; aged 60.

Nutter, George A., East Orange, N. J.; University of Pennsylvania School of Dentistry, 1910; died August 17, 1956; aged 74.

O'Connell, Thomas A., Washington, D. C.; Georgetown University School of Dentistry, 1928; died July 27, 1956; aged 57.

Opper, Hylbert N., Whipple, Ariz.; Chicago College of Dental Surgery, Loyola University, 1945; died September 16, 1956; aged 43.

Osborn, Frank, Wilmington, Ohio; Cincinnati College of Medicine and Surgery Dental Department, 1927; died August 1956; aged 51.

Oshlag, Joseph, New Rochelle, N. Y.; New York College of Dentistry, 1913; died April 6, 1956; aged 66.

Owens, Francis J., Wyandotte, Mich.; University of Pittsburgh School of Dentistry, 1918; died July 27, 1956; aged 66.

Paine, Frank C., Seattle; North Pacific College of Oregon, School of Dentistry, Portland, 1926; died June 28; aged 68.

Palm, Andrew E., Los Angeles; University of California College of Dentistry, 1930; died September 22, 1956; aged 63.

Palmer, James M., St. Louis, Mo.; died July 7, 1956; aged 75.

Parpala, Janfred, Astoria, Ore.; North Pacific College of Oregon, School of Dentistry, Portland, 1917; died July 4; aged 66.

Patterson, Hobart M., Burlington, N. C.; Atlanta-Southern Dental College, 1927; died August 4, 1956; aged 59.

Pavey, Nobel T., Dayton, Ohio; Starling-Ohio Medical College Department of Dentistry, 1911; died August 31, 1956; aged 66.

Pearce, Harold J., Providence, R. I.; Harvard University Dental School, 1925; died July 13, 1956; aged 60.

Pearl, Waller E., Sedalia, Mo.; St. Louis University School of Dentistry, 1909; died July 22, 1956; aged 70.

Penhale, John H., St. Thomas, Ontario, Canada; University of Michigan College of Dental Surgery, 1915; died September 26, 1956; aged 62.

Perdue, George G., Detroit; Royal College of Dental Surgeons School of Dentistry, Toronto, 1920; died September 24, 1956; aged 58.

Petersen, J. J., Omaha, Neb.; died June 25; aged 82.

Peterson, Elmer G., Duluth, Minn.; Chicago College of Dental Surgery, Loyola University, 1902; died August 17, 1956; aged 79.

Phillips, A. Louis, New Haven, Conn.; Temple University School of Dentistry, 1918; died July 20, 1956; aged 63.

Polk, Louis C., Corsicana, Texas; Baltimore College of Dental Surgery, University of Maryland, 1906; died August 5, 1956; aged 72.

Poole, Edgar M., Cincinnati; Ohio College of Dental Surgery, University of Cincinnati, 1902; died June 29; aged 76.

Prewitt, Paul, Lexington, Ky.; Louisville College of Dentistry of Centre College, 1900; died September 27, 1956; aged 79.

Pullen, John C., Vivian, La.; died August 7, 1956; aged 60.

Quedenfeldt, Paul, New York; University of Buffalo School of Dentistry, 1896; died June 5, 1956; aged 79.

Quinby, Julian K., Sharon, Pa.; University of Michigan College of Dental Surgery, 1910; died August 11, 1956; aged 70.

Quintard, Frank A., St. Michael, Md.; University of Pennsylvania, School of Dentistry, 1923; died June 25; aged 56.

Rasi, Hazimeh S., Brooklyn; University of Pennsylvania School of Dentistry, 1913; died September 4, 1956; aged 77.

Recob, Clifford F., Seattle; Northwestern University Dental School, 1918; died June 30; aged 64.

Reid, William E., Hammond, Ind.; Northwestern University Dental School, 1909; died February 4, 1956; aged 71.

Rice, C. Stanley, Beverly Hills, Calif.; University of Southern California College of Dentistry, 1925; died August 10, 1956; aged 54.

Rice, William S., Chicago; Ohio College of Dental Surgery, University of Cincinnati, 1910; died September 19, 1956.

Riehl, Alvin E., Chaffee, Mo.; University of Kansas City School of Dentistry, 1943; died June 17; aged 39.

Riley, Mark J., Kenosha, Wis.; Marquette University Dental School, 1913; died May 6, 1956; aged 69.

Roberts, Russell, Fair Haven, Vt.; Tufts University School of Dental Medicine, 1919; died September 12, 1956; aged 65.

Robertson, Lawrence J., White Haven, Md.; Baltimore College of Dental Surgery, University of Maryland, 1907; died July 1, 1956; aged 77.

Robins, Benjamin, Allentown, Pa.; Temple University, School of Dentistry, 1937; died June 24; aged 50.

Rochester, William A., Freeport, N. Y.; College of Dental and Oral Surgery, New York, 1919; died July 3, 1956; aged 62.

Rodin, Morris, Hempstead, N. Y.; New York College of Dentistry, 1908; died August 15, 1956; aged 69.

Rogers, Frank L., Boston; Baltimore College of Dental Surgery, University of Maryland, 1914; died September 10, 1956; aged 72.

Rose, Frederick B., Franklin, N. Y.; Philadelphia Dental College, 1895; died June 15; aged 90.

Rosenfeld, Samuel L., New York; New York College of Dentistry, 1915; died July 17, 1956; aged 65.

Rosenthal, Harvey, New York; New York College of Dentistry, 1909; died April 28, 1956; aged 69.

Russell, James L., Marshall, Mo.; Northwestern University Dental School, 1895; died April 23; aged 87.

Sadler, Ryland O., Riderwood, Md.; Baltimore College of Dental Surgery, University of Maryland, 1892; died June 8, 1956; aged 87.

Salgo, Adolph, Philadelphia; University of Pennsylvania School of Dentistry, 1906; died April 8, 1956; aged 81.

Schaumburg, Francis J., Newburgh, N. Y.; University of Pennsylvania School of Dentistry, 1925; died July 25, 1956; aged 54.

Scherer, Jack W., New Carlisle, Ind.; 1915; died March 30, 1956; aged 63.

Scheu, Carl H., Lakewood, Ohio; Western Reserve University College of Dentistry, 1918; died September 1, 1956; aged 64.

Schiller, Harley H., Youngstown, Ohio; Ohio State University College of Dentistry, 1901; died April 26, 1956; aged 77.

Schneider, Jules R., Ferndale, Mich.; University of Detroit School of Dentistry, 1952; died August 8, 1956; aged 29.

Schoonmaker, William F., Madison, Wis.; Northwestern University Dental School, 1915; died May 16, 1956; aged 63.

Scott, Harold L., Chicago; Chicago College of Dental Surgery, Loyola University, 1930; died July 20; aged 48.

Seaman, Edwin M., Garden City, N. Y.; Western Reserve University College of Dentistry, 1942; died June 15, 1956; aged 38.

Searcy, William M., Cairo, Ga.; Southern Dental College, Atlanta, 1903; died October 24, 1956; aged 73.

Sellers, Carl H., Danville, Ohio; Starling-Ohio Medical College Department of Dentistry, 1914; died May 30, 1956; aged 66.

Sellwood, Richard H., Los Angeles, Calif.; University of Southern California College of Dentistry, 1919; died July 15, 1956; aged 67.

Senty, Myron J., Galesville, Wis.; University of Illinois College of Dentistry, 1918; died July 8, 1956; aged 63.

Shewmake, Marion E., Monticello, Ark.; Vanderbilt University School of Dentistry, 1903; died July 21, 1956; aged 74.

Simon, Milton C., Ithaca, N. Y.; University of Pennsylvania School of Dentistry, 1933; died July 23, 1956; aged 50.

Skaden, Squire A., Port Allegheny, Pa.; Temple University School of Dentistry, 1908; died September 13, 1956; aged 74.

Skowron, Casimir J., Chicago; Chicago College of Dental Surgery, Loyola University, 1919; died October 11, 1956; aged 66.

Smith, Levi W., Hot Springs, Ark.; University of Tennessee, College of Dentistry, 1897; died June 29; aged 85.

Smyth, Walter J., Oakland, Calif.; University of California College of Dentistry, 1898; died September 6, 1956; aged 81.

Spear, Lawrence E., Minneapolis; University of Minnesota College of Dentistry, 1927; died September 15, 1956; aged 58.

Stanton, Edwin M., Chariton, Iowa; University of Iowa, College of Dentistry, 1918; died April 27; aged 58.

Stark, George H., Erie, Pa.; University of Pennsylvania, School of Dentistry, 1924; died June 21; aged 55.

Stephanove, Alexander D., Portland, Ore.; Keokuk Dental College, 1908; died June 19; aged 75.

Stevenson, Robert A., White Bear Lake, Minn.; Northwestern University Dental School, 1901; died August 2, 1956; aged 81.

Stinson, Oscar H., Emmitsburg, Md.; Baltimore College of Dental Surgery, University of Maryland, 1919; died August 14, 1956; aged 56.

Swartz, Frank G., Chelsea, Mich.; University of Michigan, College of Dental Surgery, 1901; died March 14, 1956; aged 82.

Sykes, Harold U., Cleveland; Starling-Ohio Medical College, Department of Dentistry, 1912; died June 26; aged 67.

Symonds, John T., Miles City, Mont.; Northwestern University Dental School, 1910; died September 23, 1956; aged 69.

Tappen, William J., Montclair, N. J.; New York Dental School, 1905; died July 28, 1956; aged 74.

Taylor, Pierce J., Lansing, Mich.; Detroit College of Medicine Department of Dental Surgery, 1899; died June 27, 1956; aged 84.

Tenzer, Sidney, New York; College of Dental and Oral Surgery, New York, 1922; died May 27, 1956; aged 57.

Terry, Clayton A., Tacoma, Wash.; North Pacific College of Oregon School of Dentistry, Portland, 1923; died May 30, 1956; aged 65.

Thomas, Arthur L., Trenton, N. J.; Howard University, College of Dentistry, 1916; died July 1; aged 63.

Thomas, Daniel P., Salt Lake City; Chicago College of Dental Surgery, Loyola University, 1904; died July 27, 1956; aged 82.

Thomas, William W., Glenside, Pa.; University of Pennsylvania School of Dentistry, 1934; died August 6, 1956; aged 46.

Thompson, Adolph W., Mobile, Ala.; Meharry Medical College Dental Department, 1910; died March 1, 1956; aged 69.

Thompson, Kay L., Jr., Cuernavaca, Mor., Mexico; University of Illinois College of Dentistry, 1926; died July 11, 1956; aged 64.

Thornton, Thomas O., Kansas City, Mo.; Western Dental College, Kansas City, 1910; died June 7; aged 66.

Thornton, William A., Marianna, Ark.; University of Tennessee, College of Dentistry, 1900; died June 27; aged 81.

Treasure, Charles B., Bethany, Mo.; Kansas City Dental College, 1917; died June 27, 1956; aged 59.

Tribbitt, Robert M., Columbus, Ohio; Howard University, School of Dentistry, 1912; died June 16; aged 68.

Trovillion, Howard W., Alton, Ill.; Washington University, School of Dentistry, St. Louis, 1924; died June 10; aged 57.

Tuck, William W., Brooklyn; University of Pennsylvania, School of Dentistry, 1912; died July 13; aged 65.

Tucker, Lloyd E., Monette, Ark.; University of Tennessee College of Dentistry, 1913; died July 19, 1956; aged 69.

Tuttle, Jason H., Glen Cove, N. Y.; New York College of Dentistry, 1895; died July 19, 1956; aged 83.

Van Buskirk, Joseph M., San Diego; Washington University School of Dentistry, St. Louis, 1901; died August 13, 1956; aged 77.

Van Devere, Carlton M., Newark, N. J.; New York University College of Dentistry, 1956; died September 17, 1956; aged 32.

Van Horn, Dallas M., Rochester, N. Y.; University of Pennsylvania School of Dentistry, 1919; died September 18, 1956; aged 58.

Vibber, Deane R., Elyria, Ohio; Western Reserve University College of Dentistry, 1953; died June 1956; aged 29.

Vigil, Victor H., El Paso, Texas; St. Louis University School of Dentistry, 1951; died August 22, 1956; aged 37.

Vincent, Walter D., Varnville, S. C.; Atlanta Dental College, 1901; died July 28, 1956; aged 79.

Vosper, Stanley D., Akron, Ohio; Ohio Medical University College of Dentistry, 1907; died July 19, 1956; aged 72.

Wagner, Roy E., Buffalo; University of Buffalo School of Dentistry, 1926; died September 8, 1956; aged 54.

Wagoner, B. A., Wytheville, Va.; University College of Medicine Dental Department, Richmond, 1912; died August 17, 1956.

Wallace, Oren W., Rochester, Pa.; University of Pittsburgh, School of Dentistry, 1915; died June 13; aged 67.

Walls, Raymond M., Coconut Grove, Fla.; University of Pennsylvania School of Dentistry, 1908; died June 15; aged 68.

Warnock, William J., El Paso, Texas; Baltimore College of Dental Surgery, University of Maryland, 1889; died August 21, 1956; aged 90.

Weaver, Lee A., Nunda, New York; University of Pennsylvania School of Dentistry, 1911; died August 19, 1956; aged 66.

Webb, Walter, Springhouse, Pa.; University of Pennsylvania School of Dentistry, 1898; died April 17, 1956; aged 91.

Webb, William C., Jr., Dallas, Texas; Kansas City Dental College, 1914; died June 18; aged 63.

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William O. Vopata, Secy., 1011 Lake St., Oak Park, Ill.

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Pedodontics: William W. Demeritt, School of Dentistry, University of North Carolina, Chapel Hill, N.C.

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Prosthodontics, Partial: Douglas H. Yock, School of Dentistry, University of Minnesota, Minneapolis

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Research: Alton K. Fisher, College of Dentistry, State University of Iowa, Iowa City

Roentgenology: Donald T. Waggener, 800 S. 13th St., Lincoln, Neb.

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LON W. MORREY, *Editor* JOHN J. HOLLISTER, *Business Manager*

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Announcements

MEETINGS OF THE AMERICAN DENTAL ASSOCIATION

Ninety-Eighth Annual Session	Nov. 4-7, 1957	Miami, Fla.
Ninety-Ninth Annual Session	Nov. 10-13, 1958	Dallas, Texas
One-Hundredth Annual Session	Sept. 21-24, 1959	New York
One-Hundred and First Annual Session	Oct. 17-20, 1960	Los Angeles

MEETINGS OF CONSTITUENT SOCIETIES

State	Date	Place	Secretary	Address
Alabama	Apr. 16-18	Birmingham	F. A. Finney, Jr.	Box 787, Gadsden
Alaska			C. L. Polley	Box 1896, Juneau
Arizona	May 1-4	Chandler	W. G. Burke	17 E. Weldon Ave., Phoenix
Arkansas	Apr. 7-10	Little Rock	D. M. Hamm	Box 89 Clarksville
California	Apr. 15-17	San Francisco	W. J. Healy	450 Sutter St., San Francisco
S. California	Apr. 7-10	Los Angeles	S. M. Silverman	903 Crenshaw Blvd., Los Angeles 19
Colorado	Oct. 6-9	Colorado Springs	G. H. Jackson	Republic Bldg., Denver
Connecticut	May 15-17	Hartford	E. S. Arnold	37 Linnard Rd., W. Hartford
Delaware			J. C. Gantt	1102 N. Jackson, Wilmington
District of Columbia	Mar. 10-13	Washington	J. F. Keaveny	1029 Vermont Ave., N.W., Washington
Florida	Apr. 15-17	St. Petersburg	W. C. Mayo	Brent Annex, Pensacola
Georgia	Sept. 29-Oct. 2	Atlanta	J. W. Yarbrough	Southern United Bldg., Macon
Hawaii	June	Honolulu	J. H. Dawe	810 N. Vineyard St., Honolulu
Idaho	May 16-18	Pocatello	M. R. Johnson	1606 E. Center St., Pocatello
Illinois	May 12-15	Peoria	P. W. Clopper	Jefferson Bldg., Peoria
Indiana	May 20-22	Indianapolis	W. R. Shoemaker	Citizens Bank Bldg., Anderson
Iowa	May 5-8	Des Moines	H. I. Wilson	Insurance Exchange Bldg., Des Moines
Kansas	May 13-16	Wichita	F. A. Richmond	Brotherhood Bldg., Kansas City 1
Kentucky	Mar. 31-Apr. 3	Louisville	A. B. Coxwell, Jr.	1976 Douglass Blvd., Louisville
Louisiana	Apr. 24-27	Lake Charles	J. S. Bernhard	2515 Line Ave., Shreveport
Maine			S. M. Gower	Box 27, Skowhegan
Maryland	May 5-8	Baltimore	C. L. Inman, Jr.	Medical Arts Bldg., Baltimore
Massachusetts	May 5-8	Boston	H. E. Tingley	12 Bay State Rd., Boston 15
Michigan	Apr. 8-10	Detroit	F. Wertheimer	Michigan Dept. of Health, Lansing
Minnesota	Apr. 1-3	Minneapolis	C. V. E. Cassel	Hamm Bldg., St. Paul
Mississippi	Apr. 28-May 1	Jackson	B. A. Cohen	Plaza Bldg., Jackson 27
Missouri	May 26-29	St. Louis	E. D. Suggett	Merchants Bank Bldg., Jefferson City
Montana	May 1-3	Billings	E. G. Vedova	Box 311, Roundup
Nebraska	Apr. 29-May 1	Lincoln	F. A. Pierson	Federal Securities Bldg., Lincoln
Nevada	May 5-7	Las Vegas	O. M. Seifert	755 Ryland Ave., Reno
New Hampshire	June 16-19	Whitefield	F. E. Williams	814 Elm St., Manchester
New Jersey	May 12-15	Atlantic City	J. G. Carr	407 Cooper St., Camden
New Mexico	May 19-22	Albuquerque	J. S. Eilar	7 Medical Arts Sq., N.E., Albuquerque
New York	May 20-22	New York	C. A. Wilkie	1 Hanson Pl., Brooklyn
North Carolina	May 5-8	Pinehurst	L. H. Butler	Jefferson Bldg., Greensboro
North Dakota	Apr. 28-May 1	Fargo	J. H. Pfister	419½ Dakota Ave., Wahpeton

State	Date	Place	Secretary	Address
Ohio	Oct. 6-9	Columbus	E. G. Jones	185 E. State St., Columbus
Oklahoma	Apr. 14-17	Tulsa	S. A. Russman	1219 Classen Dr., Oklahoma City
Oregon	Mar. 4-6	Portland	T. D. Holder	Selling Bldg., Portland
Panama Canal Zone	Apr. 4, 5	Albrook A.F.B.	A. L. Robertson	5700 USAF Dispensary, Albrook Air Force Base
Pennsylvania	May 23-25	Harrisburg	M. D. Zimmerman	217 State St., Harrisburg
Puerto Rico			R. Carrasquillo	P. O. Box 214, De Diego #3 Rio Piedras
Rhode Island			J. S. Allen	Union Trust Bldg., Providence
South Carolina	May 12-14	Myrtle Beach	J. E. Wallace	1420 Gregg St., Columbia
South Dakota	May 12-15	Watertown	R. E. Decker	Box 308, Parker
Tennessee	May 13-16	Gatlinburg	A. M. Ballentine	215 W. Flower St., Pulaski
Texas	Apr. 28-May 1	Houston	W. Ogle	3707 Gaston Ave., Dallas 10
Utah	May 23-25	Salt Lake City	R. C. Dalgleish	State Capitol Bldg., Salt Lake City
Vermont	May 26-28	Manchester	E. H. Van Santvoord	22 Washington St., Rutland
Virginia	Apr. 29-May 1	Virginia Beach	W. T. McAfee	Colonial National Bank Bldg., Roanoke
Washington	Apr. 1-3	Seattle	J. M. Deines	Medical & Dental Bldg., Seattle
West Virginia	July 21-24	White Sulphur Springs	G. N. Casto, Jr.	3820 McCorkle Ave., S.E., Charleston
Wisconsin	Apr. 29-May 1	Milwaukee	H. O. Hoppe	1331 W. Vliet St., Milwaukee
Wyoming	June	Sheridan	T. J. Drew	State Office Bldg., Cheyenne

MEETINGS OF STATE BOARDS OF DENTAL EXAMINERS

State	Date	Place	Secretary	Address
Alabama	June 9-14* June 10, 11†	Birmingham	W. L. McCarty	Professional Bldg., Montgomery
Alaska			R. H. Williams	Box 2122, Juneau
Arizona	June 24-28* June 26†	Florence	W. G. Biddulph	1502 W. Osborn Rd., Phoenix
Arkansas			W. T. Jones	107 E. Shelton, Monticello
California			T. G. Atwood	450 Sutter St., San Francisco
	June 24	Los Angeles		
	July 29	San Francisco		
Colorado	June 24-28‡		R. F. Gilmore	Republic Bldg., Denver 2
Connecticut			C. G. Brooks	302 State St., New London
Delaware			P. K. Musselman	143 W. Main St., Newark
District of Columbia			W. T. Birthright	1835 Eye St., N.W., Washington
Florida	July 8-18*†	Jacksonville	R. P. Taylor, Jr.	P. O. Box 2913, Jacksonville 3
Georgia			W. G. Brown	Blackshear
Hawaii	Feb. 20-24‡		H. L. Houvener	Dillingham Bldg., Honolulu
Idaho	June 24-26	Boise	A. G. DeWinter	Sun Bldg., Boise
Illinois			W. A. McKee	Wood Bldg., Benton
Indiana	June 11-14*†‡		C. A. Frech	Gary National Bank Bldg., Gary
Iowa	May 27-31*†	Iowa City	P. A. Hahn	Farmers & Merchants Bank Bldg., Burlington
Kansas	June 3-6	Kansas City, Mo.	G. L. Teall	Box 71, Hiawatha
Kentucky	June 10-13*†	Louisville	J. J. Kelly	102 W. Madison St., Franklin
Louisiana	June 2-7‡		R. C. Steib	Maison Blanche Bldg., New Orleans
Maine	June 20-22	Kennebunkport	S. M. Gower	Box 27, Skowhegan
Maryland	June 10-12‡		H. Levin	3429 Park Heights Ave., Baltimore 15
Massachusetts			T. J. Glennon	323 Main St., Woburn
Michigan			J. L. Champagne	3714 W. McNichols Rd., Detroit 21
	June 9-15	Ann Arbor		
Minnesota	June 17-21*†	Minneapolis	M. G. Walls	Lowry Bldg., St. Paul
Mississippi	June 18-20*†	Jackson	J. C. Boswell	Medical Arts Bldg., Jackson
Missouri	June 10-15, 17, 18* June 10, 13, 17, 18†	Kansas City	R. R. Rhoades	Central Trust Bldg., Jefferson City
Montana			R. O. Betzner	303 Power Block, Helena
Nebraska			H. E. Weber	Federal Securities Bldg., Lincoln
Nevada			A. A. Cozzalio	130 N. Virginia, Reno
New Hampshire	June 20, 21* June 20†	Boston	S. G. Markos	8 Renaud Ave., Dover

State	Date	Place	Secretary	Address
New Jersey			C. J. Schweikhardt	150 E. State St., Trenton 8
New Mexico			J. J. Clarke, Sr.	Artesia
New York	Feb. 5-8*‡		D. W. Beier	23 S. Pearl St., Albany 7
	Feb. 5, 6†‡			
	July 1,2,9-12*‡			
	July 1,2,9,10†‡			
	Dec. 10-13*‡			
North Carolina	June 24*†	Chapel Hill	J. H. Gulon	Doctors Bldg., Charlotte 7
North Dakota	July 8-12	Fargo	T. M. Flath	Williston
Ohio			H. B. Smith	322 E. State St., Columbus 15
Oklahoma			W. E. Cole	2420 N. Meridian, Oklahoma City
Oregon			F. L. Utter	Pioneer Trust Bldg., Salem
Pennsylvania	June 16-21*	Philadelphia	R. E. V. Miller, Sr.	Dept. of Public Instruction, Box 911, Harrisburg
	June 16-19†	Pittsburgh		
Puerto Rico			J. Mercado C.	Comercio St. #452, San Juan
Rhode Island			F. M. Hackett	267 Academy Ave., Providence
South Carolina			J. L. Gunter	1226 Pickens St., Columbia 1
South Dakota			H. T. Aker	Canton
Tennessee	June 10-15	Memphis	C. R. Aita	Bennie-Dillon Bldg., Nashville
Texas			R. T. Weber	Capital National Bank Bldg., Austin 16
Utah	June 24-30‡		A. Ridge, Jr.	10 S. Second E., Provo
Vermont	June 24-26*†	Burlington	P. M. Fitch	Newport
Virginia	June 10-15*	Richmond	J. M. Hughes	Medical Arts Bldg., Richmond
	June 10, 11†			
Washington	Jan. 14-17	Seattle	R. W. Frick	P. O. Box 308, Pomeroy
West Virginia	June 24-26	West Liberty	C. C. Cottrill	Box 111, Glen Rogers
Wisconsin	June 3-7*†	Milwaukee	S. F. Donovan	Tomah
Wyoming			W. A. Hocker	O & S Bldg., Casper

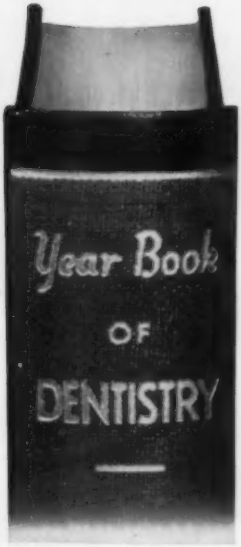
Most states require applications to be in 30 days prior to examination date.
*Dental examination. †Dental hygiene examination. ‡Write to secretary of dental examining board for information on locations of examinations.

MEETINGS OF OTHER ORGANIZATIONS

Name	Date	Place	Secy. or Chm.	Address
Academy of Denture Prosthetics	Apr. 28-May 4	Columbus, Ohio	I. L. Furnas Secy.	928 Silverado St., La Jolla, Calif.
All India Dental Conference	Feb. 26-28	Bombay, India	S. A. Tellis Secy.	Sambava Chambers, Sir P.M. Rd., Bombay 1, India
American Academy for Plastics Research in Dentistry	Feb. 3	Chicago	L. W. Harris Secy.	25 E. Washington St., Chicago 2
American Academy of Crown and Bridge Prosthodontics	Feb. 2, 3	Chicago	E. C. Brooks Secy.	4500 Olive St., St. Louis
American Academy of Dental Medicine	May 29-31	Boston	G. J. Witkin Secy.	45 S. Broadway, Yonkers, N. Y.
American Academy of Implant Dentures	Feb. 1-3	Chicago	P. S. Loechler Secy.	540 N. California St., Stockton, Calif.
American Academy of Maxillofacial Prosthetics	Jan. 31-Feb. 2	Chicago	A. H. Bulbulian Pres.	Mayo Clinic, Rochester, Minn.
American Academy of Oral Pathology	Apr. 6-8	Washington, D.C.	J. L. Bernier Secy.	Armed Forces Institute of Pathology, Walter Reed Army Medical Center, Washington, D.C.
American Academy of Restorative Dentistry	Feb. 2, 3	Chicago	A. G. James Secy.	409 N. Camden Dr., Beverly Hills, Calif.
American Association of Dental Schools	Mar. 24-27	Atlantic City, N. J.	M. W. McCrea Secy.	42 S. Green St., Baltimore
American Association of Endodontics	Feb. 2, 3	Chicago	V. B. Milas Secy.	2559 W. 63rd St., Chicago 29
American Association of Industrial Dentists	Apr. 20-26	St. Louis	E. R. Aston Secy.	Pennsylvania Dept. of Health, P. O. Box 90, Harrisburg, Pa.
American Association of Orthodontists	May 13-16	New Orleans	Earl E. Shepard Secy.	8230 Forsyth Blvd., St. Louis
American Board of Pedodontics	July 25-27	San Francisco	R. L. Ireland Secy.	College of Dentistry, University of Nebraska, Lincoln 8, Neb.

Name	Date	Place	Secy. or Chm.	Address
American Dental Society of Europe	Aug. 28-31	Lausanne, Switzerland	J. P. Molony Secy.	110 Harley St., London W. 1, England
American Denture Society	Feb. 2, 3	Chicago	V. L. Steffel Secy.	College of Dentistry, Ohio State University, Columbus
American Equilibration Society	Feb. 1	Chicago	C. K. Perry Secy.	16350 E. Warren Ave., Detroit 24
American Society for the Advancement of General Anesthesia in Dentistry	Mar. 25	New York	M. H. Feldman Exec. Secy.	730 Fifth Ave., New York 19
Berkshire Conference in Oral Pathology and Periodontology	June 16-20	Lenox, Mass.	I. Glickman Dir.	Tufts University, School of Dental Medicine, 136 Harrison Ave., Boston 11
Chicago Dental Society	Feb. 3-6	Chicago	K. S. Richardson Exec. Secy.	30 N. Michigan Ave., Chicago
Cincinnati Dental Society	Mar. 17-19	Cincinnati	H. G. Frankel Chm.	Doctors Bldg., Cincinnati
Cleveland Dental Society	May 6-8	Cleveland	J. T. Reifke Chm.	710 Carnegie Hall Bldg., Cleveland 15
Council on Dental Education, Dental Aptitude Tests	Apr. 26, 27		S. Peterson Secy.	222 E. Superior St., Chicago
Federation Dentaire Internationale, Twelfth International Dental Congress	Sept. 7-14	Rome, Italy	P. Lalli Secy., Gen.	Via Boezio 16, Rome, Italy
Greater Philadelphia Annual Meeting	Mar. 27-29	Philadelphia	H. Silver Exec. Secy.	Bellevue-Stratford Hotel, Broad and Walnut Sts., Philadelphia 2
International Academy of Oral Dynamics	Mar. 9	Washington, D.C.	R. K. Sindmack	573 Bloomfield Ave., Verona, N. J.
International Association for Dental Research	Mar. 21-23	Atlantic City, N. J.	D. Y. Burrill Asst. Secy.	129 E. Broadway, Louisville 2, Ky.
Japan Dental Association, Biennial National Meeting	Apr. 28-30	Tokyo	T. Kashima Dir.	1-Chome, Ogawa-machi, Kanda, Tokyo, Japan
National Board of Dental Examiners	Apr. 1, 2		G. J. Casey Secy.	222 E. Superior St., Chicago
National Dental Association	Aug. 4-8	Hot Springs, Ark.	J. A. Jackson Secy.	P.O. Box 197, Charlottesville, Va.
Northwest Academy of Dental Medicine	May 12-16	Sun Valley, Idaho	G. Underwood Secy.	Selling Bldg., Portland 5, Ore.
Pacific Coast Dental Conference	Aug. 19-22	San Diego	C. W. Gilman Secy.	219 E. 8th St., National City, Calif.
Semaine Odontologique Internationale, Sixty-Third Dental Congress of Paris	Apr. 11-17	Paris, France	M. Vincent Gen. Secy.	31, rue Tronchet, Paris, France
Third International Medical and Surgical Meetings—International Medical and Health Exhibition	June 1-9	Turin, Italy	B. Roccia Dir.	Dentistry Clinic, University of Turin, Corso Polonia 2, Turin, Italy
Thomas P. Hinman Mid-Winter Clinic	Mar. 17-20	Atlanta, Ga.	E. K. Patton Gen. Chm.	Box 136, Ben Hill Sta., Atlanta 11, Ga.
Western Society of Periodontology	Mar. 29-31	Las Vegas, Nev.	C. L. Foss	239 E. Laurel St., San Diego 1, Calif.

ANNOUNCING



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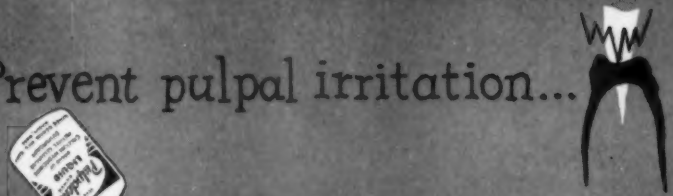

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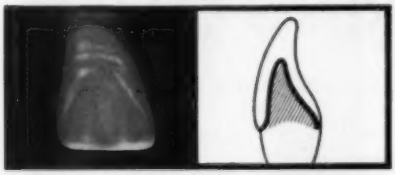

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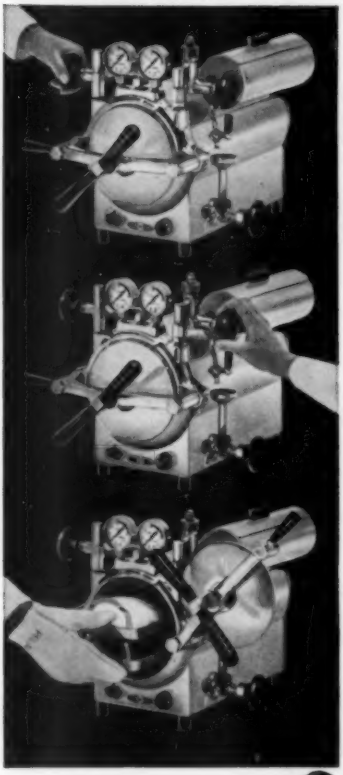

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No. 5

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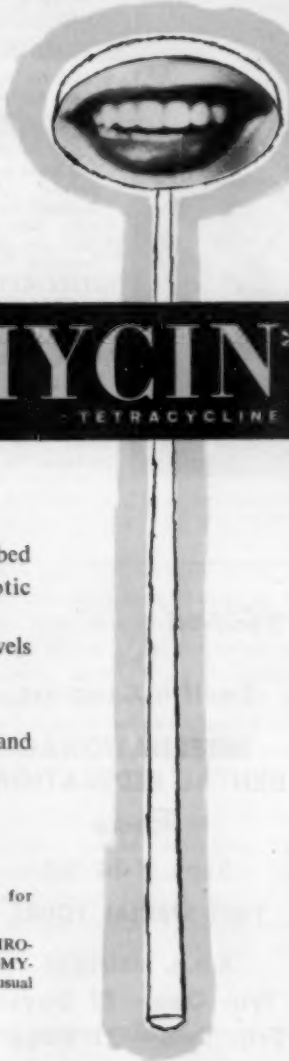

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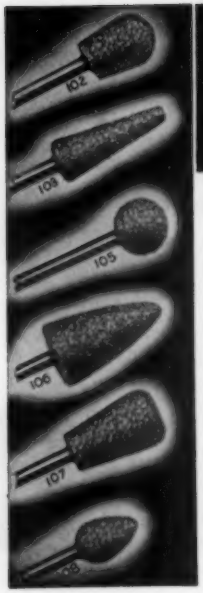

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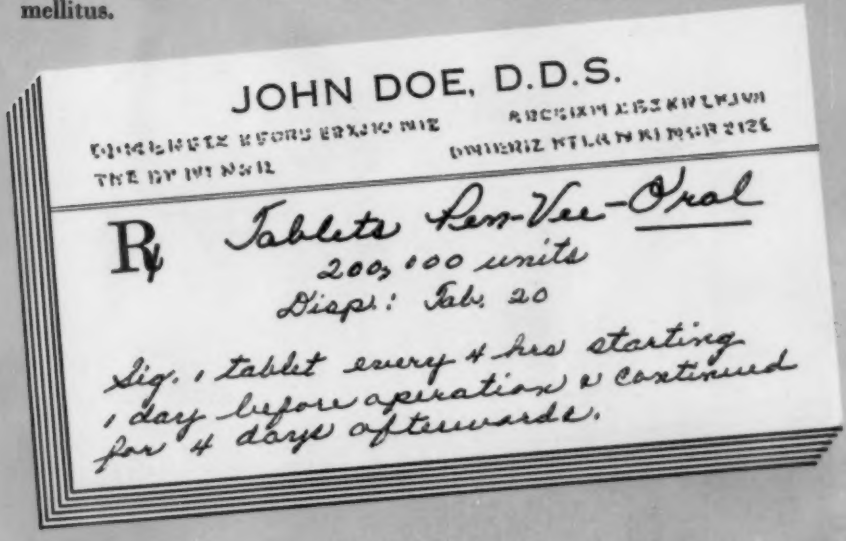
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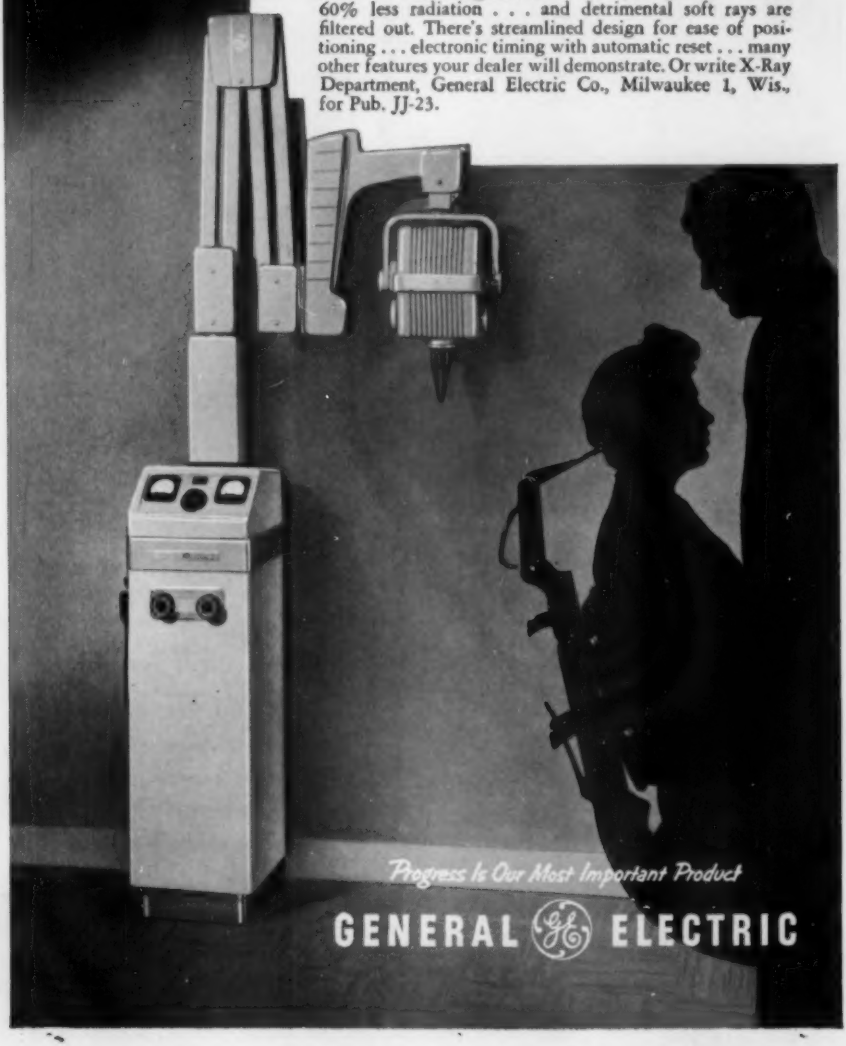

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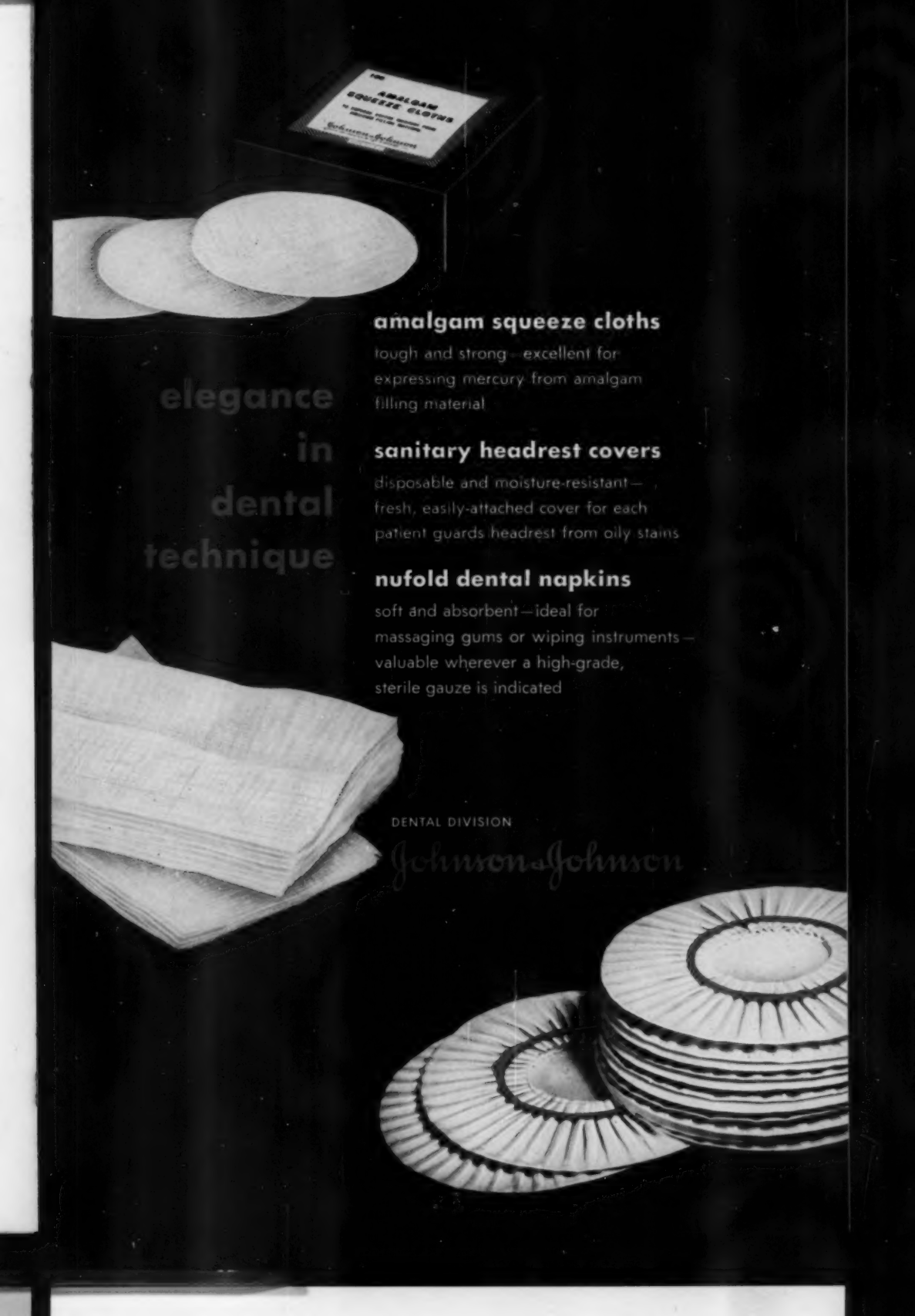
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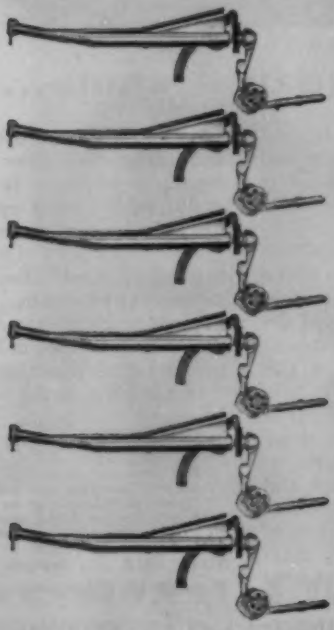

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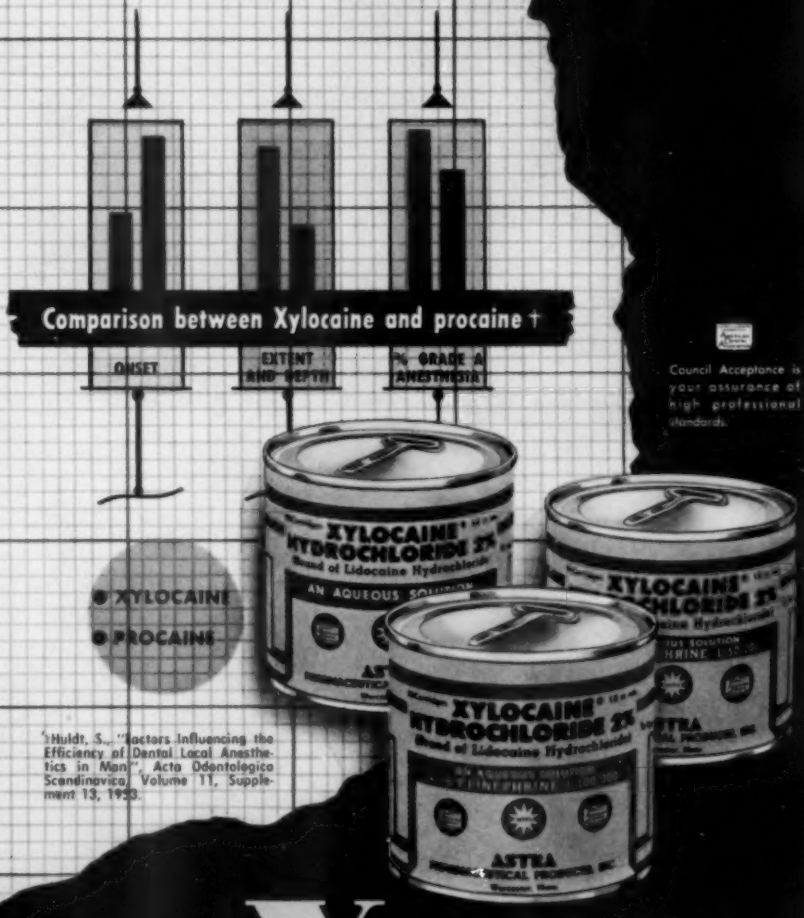

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† Huldt, S., "Factors Influencing the Efficiency of Dental Local Anesthetics in Man", Acta Odontologica Scandinavica, Volume 11, Supplement 13, 1953.

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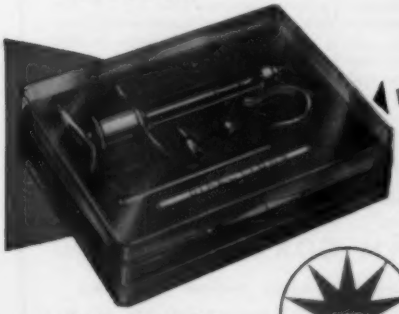

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Make Neat Bases on Study Models

Pour plaster or stone in former; mount anatomical cast and let set. Soft, flexible rubber permits easy removal; model comes out with perfectly-finished, symmetrical base.

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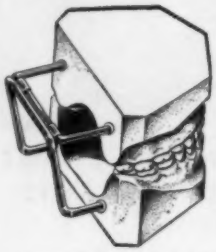

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Calibrations on vertical plane help determine height of base needed for harmonious proportions between base and anatomic part of model. Center line facilitates centering anatomic cast on base.

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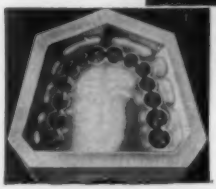

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The Contribution of *Enriched Bread* to Childhood Nutrition

"Children reared on nutritionally adequate diets have many advantages over those reared on poor diets. These advantages include: better growth and development; greater strength and vigor; and more evidence of good general nutrition."[1] The nutritional status of millions of American school children has been enhanced significantly by enriched bread during the past fifteen years, and for these reasons:

Enriched bread contains thiamine, riboflavin, niacin, calcium, iron, and protein. All have made important contributions to the reduction of deficiency diseases traced to the lack of these nutrients. Many authorities cite the virtual elimination of deficiency diseases in recent years as impressive evidence of the role enriched bread has played.[2]

Enriched bread, containing added nonfat dry milk, provides a highly nutritive protein combination derived from three sources —flour, milk and yeast—with milk and yeast proteins supplementing the flour protein. These proteins not only contribute to the maintenance and repair of children's tissues, but also to good growth.

Dental authorities agree that a good diet is an important factor in dental health. The complex carbohydrates present in bread—in contrast to the action of simple carbohydrates—do not readily diffuse into dental plaques and therefore are of low cariogenic activity.[3]

These are some of the reasons why the role of enriched bread, in improving the health of millions of American school children, has been referred to as one of the most important advancements in public health measures since compulsory pasteurization of milk.

1. Martin, E.A.: Roberts' Nutrition Work with Children, Chicago, University of Chicago Press, 1954, p. 53.
2. Sebrell, W.H.: Developing Modern Nutrition Programs, Public Health Reports, United States Department of Health, Education and Welfare 69:277 (Mar.) 1954.
3. Joint Report of the Council on Dental Health and the Council on Dental Therapeutics of the American Dental Association: Sugar and Dental Caries: The Effect on the Teeth of Sweetened Beverages and Other Sugar-Containing Substances, J. Am. Dent. A. 47:387 (Oct.) 1953.

AMERICAN BAKERS ASSOCIATION
20 NORTH WACKER DRIVE • CHICAGO 6, ILLINOIS

The nutritional statements made in this advertisement have been reviewed by the Council on Foods and Nutrition of the American Medical Association and found consistent with current authoritative medical opinion.

New Technic For Precise, Rapid, Cavity Preparation

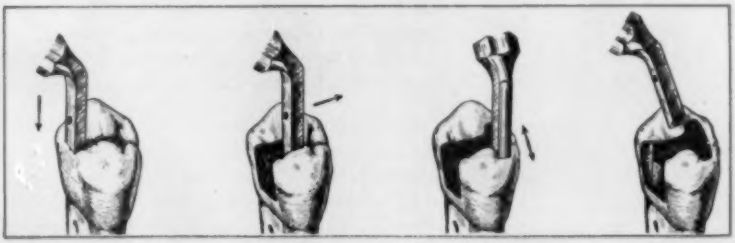
With Cavitron's New Hollow Tips

• • **Occlusal Cavities**

Apply Cavitip vertically, with very light pressure, until it has penetrated to desired depth. Extend preparation by moving tip laterally as illustrated.

Each cut takes only seconds and produces smooth walls and floor, requiring no finishing.

• • **MO, DO, MOD**



Prepare proximal box by applying Cavitip vertically; then establish occlusal floor by applying same tip laterally at desired depth in proximal box. Complete preparation by moving tip laterally as illustrated.

Each cut takes only seconds and produces smooth walls and floor, requiring no finishing.

"This is the fact that its routine use enormously reduces the fear and apprehension of the child patient, enables the operator almost to eliminate the use of anesthesia and makes it possible for the patient to accept, with comfort and without anesthesia, more actual dental work per chair hour than has been our experience with rotary instruments." *Zinner, D., and Whitstone, W., J. Den Child., Mar. 1956.*

"On the basis of histologic and clinical evidence, no unfavorable pulpal reaction resulted from the use of an ultrasonic cutting instrument for the preparation of cavities in the teeth used in this study." *Healey, H., Patterson, S., and Van Huysen, G., U.S.A.F. Med. J., May 1956.*

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A-56

Oatmeal Presents No Digestive Burden

Its chemical, physical, and physiologic properties endow oatmeal with remarkable ease of digestion.

In a broad series of tests the average coefficient of digestibility for oat protein was found to be 76 per cent;[1] that for oat carbohydrate, 98 per cent;[1] that of oat fat ranged from 56 to as high as 100 per cent.[2]

Oatmeal, because of its eye appeal and pleasing taste, stimulates the flow of salivary and gastric secretions. Softly particulate in form, it is readily miscible with the digestive juices and presents a large surface area to enzymatic action, thus yielding rapidly to gastric and intestinal digestion.

Oatmeal promotes comfort and efficiency of digestion throughout the gastrointestinal tract. The small amount of cellulosic material apparently aids in the breaking up of the compact gelatinous food mass in the stomach, thus facilitating gastric emptying.[3]

Because of its chemical and mechanical blandness, its remarkable digestibility, and high nutrient value, oatmeal merits continued recommendation as a key dish of America's breakfast, not only in the normal diet, but also whenever dietary adjustment is therapeutically indicated.

Quaker Oats and Mother's Oats, the two brands of oatmeal offered by The Quaker Oats Company, are identical. Both brands are available in the Quick (cooks in one minute) and the Old-Fashioned varieties which are of equal nutrient value.

DENTAL AUTHORITIES stress the importance of optimal nutrition in the aim toward better dental health during the early growth years. Oatmeal, with its wealth of essential nutrients, not only contributes broadly to good nutrition, but—since its carbohydrate is not readily degraded to simple fermentable sugars—is of virtually no cariogenic influence.

1. Merrill, A.L., and Watt, B.K.: Energy Value of Foods ... Basis and Derivation, United States Department of Agriculture, Human Nutrition Research Branch, Agricultural Research Service, Agriculture Handbook No. 74, March 1955, pp. 8, 9, 25, 32-43, 60-87.
2. McCance, R.A., and Glaser, E.M.: The Energy Value of Oatmeal and the Digestibility and Absorption of Its Proteins, Fats and Calcium, Brit. J. Nutrition 2:221 (1948).
3. McLester, J.S., and Darby, W.J.: Nutrition and Diet in Health and Disease, ed. 6, Philadelphia, W.B. Saunders Company, 1952, pp. 189-190.

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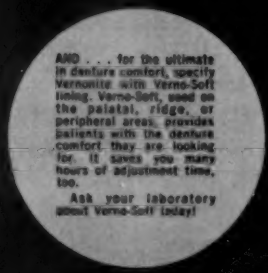
When you specify Vernonite Powder and Monosol Liquid, "Realist" Gel or Regular Vernonite Gel, you can be confident that your dentures will be strong, esthetic and functionally excellent. For this basic fact remains unchanged.— Vernonite has been the criterion of quality in acrylic denture resins since 1938. Vernonite means supreme QUALITY.


AND . . . for the ultimate in denture comfort, specify Vernonite with Verno-Soft lining. Verno-Soft, used on the palatal, ridge, or peripheral areas, provides patients with the denture comfort they are looking for. It saves you many hours of adjustment time, too.
Ask your laboratory about Verno-Soft today!

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Producers of Vernonite... the original denture acrylic

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Nature came up with some of the weirdest adaptations around the time of Triceratops (the old boy shown above). Man's adaptations, less visibly apparent but more practical, have often come from his own inventive hands.

This century, for example, has seen the rise of the dental casting process; and Ney has led in its development and in the evolution of today's specialized gold alloys—some with strengths up to three times that of structural steel.

From the earliest "Weinstein Series" in 1914 there have emerged three great golds . . . "Identical Triplets" but of graduated hardness:

NEY-ORO A-1	NEY-ORO B-2	NEY-ORO G-3
for inlays	for bridges	for partials

These golds, making up Ney's "Balanced Line", lead all the rest—too late for Triceratops but much appreciated by man.

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for caries-active patients *prescribe*

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Sugarless Gum

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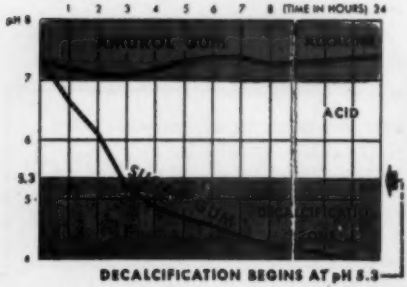
Comparative *in vitro* Effects of Sugar Gum and Amurol Gum added to Saliva



As shown above, pH of carries-active saliva *in vitro* remains in alkaline zone for hours with AMUROL SUGARLESS GUM, whereas with sugar gum the pH drops to the acid level under the same conditions.

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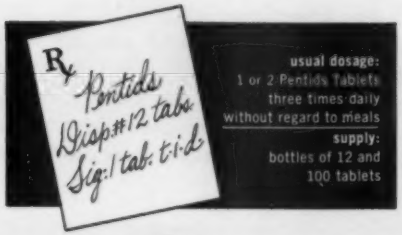

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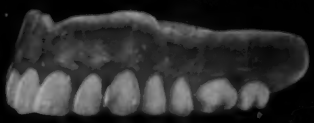

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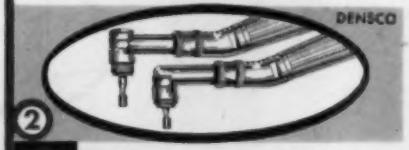

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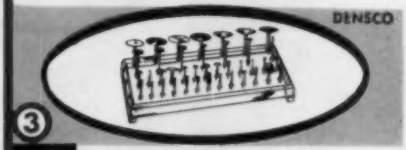

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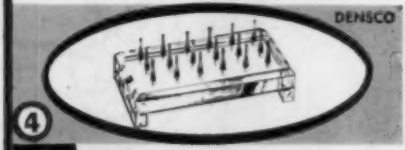

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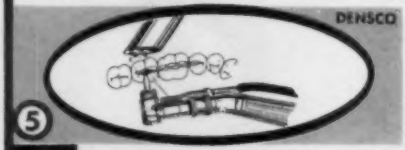

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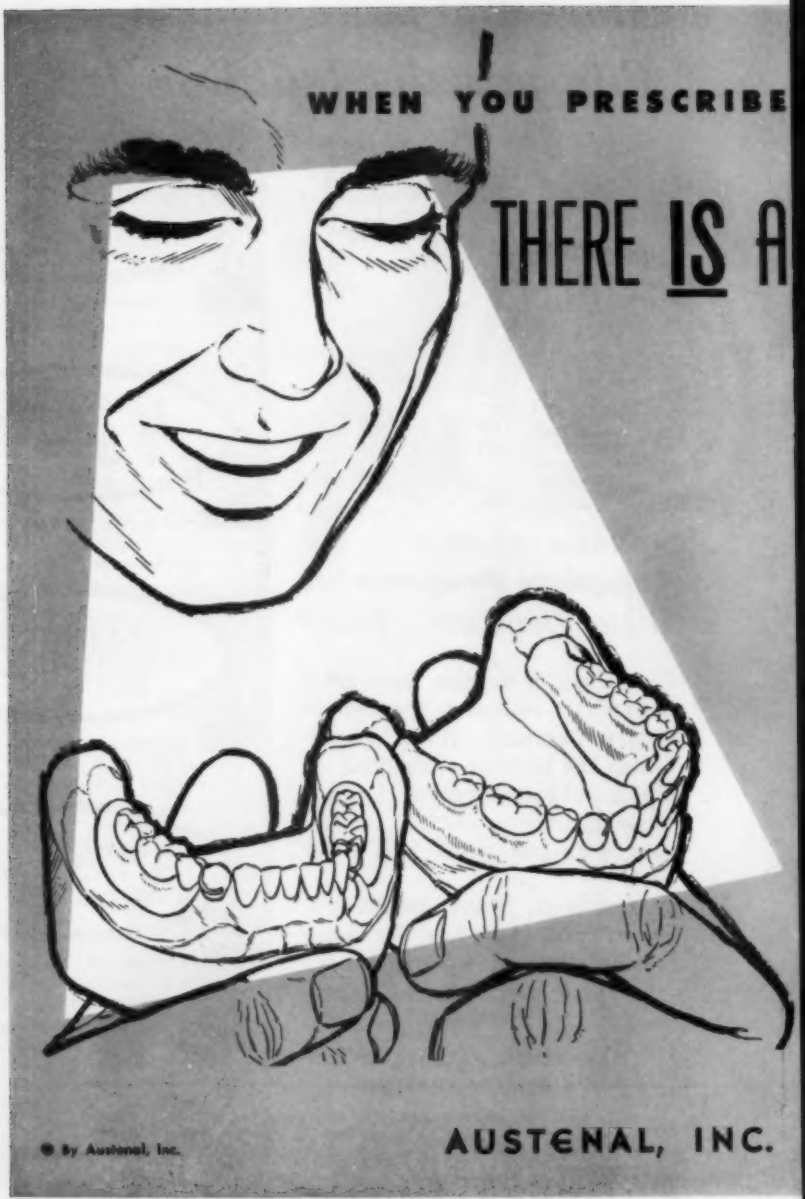
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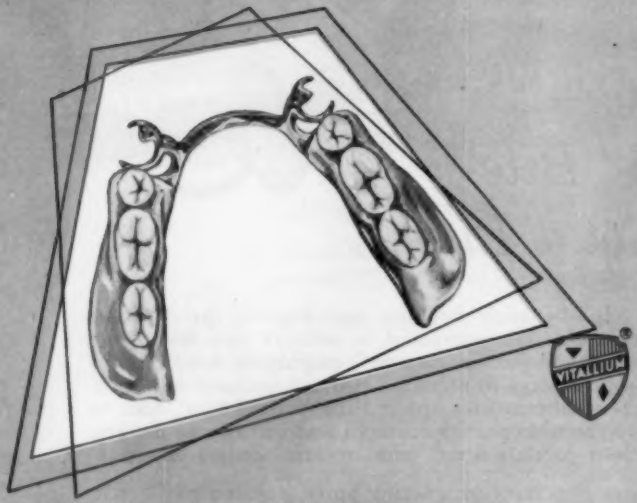

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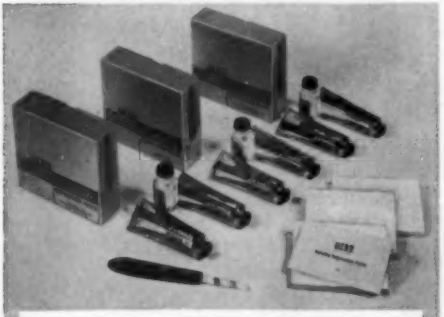

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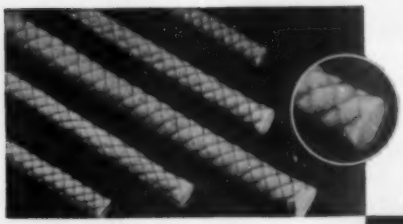

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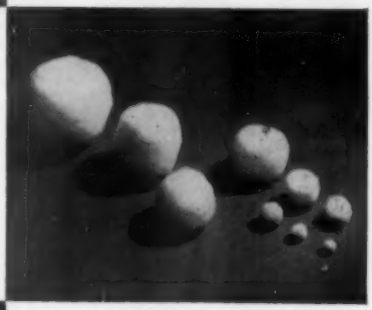

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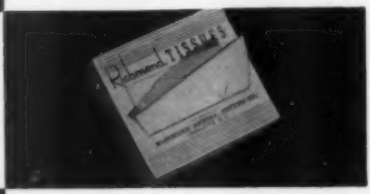

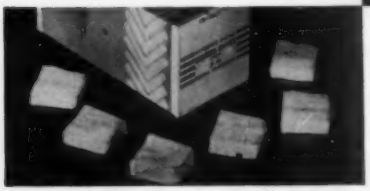

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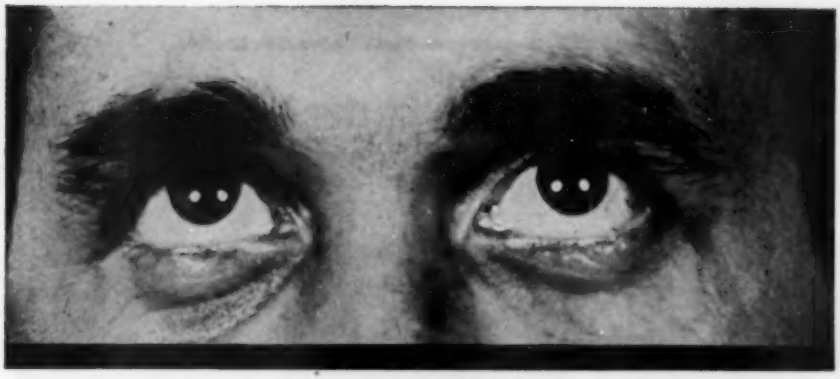

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*JADA Vol. 47, P. 324-329, Sept. 1953. NELSEN, R. J., D. D. S.: PELANDER, C. E.: KUMPALA, J. W.: Hydraulic Turbine Contra Angle Handpiece. (Reprint on request).

*JADA Vol. 52, P. 426-428, April 1956. PHILLIPS, R. W., M. S.; PAFFENBARGER, G. C., D. D. S.: Research on Dental Materials.

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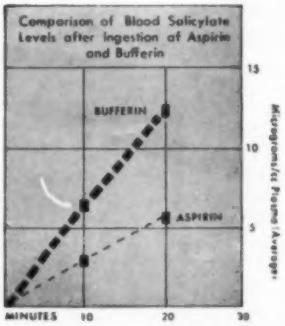

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